

SEQUENCE LISTING

10 508905

<110> Transmolecular, Inc.
GONDA, Matthew A
GREENWOOD, John D

<120> Recombinant Expression Vectors for Functional Nav1.9 Sodium Channels

<130> 51530-5007-WO

<150> US 60/365,550

<151> 2002-03-20

<160> 35

<170> PatentIn version 3.1

<210> 1

<211> 5905

<212> DNA

<213> Rattus norvegicus

<220>

<221> CDS

<222> (52)..(5349)

<223>

<400> 1

tctggagcca tacggtgccc tgatcctctg taccaggaag acagggtgaa g atg gag 57
Met Glu
1

gag agg tac tac ccg gtg atc ttc ccg gac gag cgg aat ttc cgc ccc 105
Glu Arg Tyr Tyr Pro Val Ile Phe Pro Asp Glu Arg Asn Phe Arg Pro
5 10 15

ttc act tcc gac tct ctg gct gcc ata gag aag cgg att gct atc caa 153
Phe Thr Ser Asp Ser Leu Ala Ala Ile Glu Lys Arg Ile Ala Ile Gln
20 25 30

aag gag agg aag aag tcc aaa gac aag gcg gca gct gag ccc cag cct 201
Lys Glu Arg Lys Lys Ser Lys Asp Lys Ala Ala Ala Glu Pro Gln Pro
35 40 45 50

cgg cct cag ctt gac cta aag gcc tcc agg aag tta cct aag ctt tat 249
Arg Pro Gln Leu Asp Leu Lys Ala Ser Arg Lys Leu Pro Lys Leu Tyr
55 60 65

ggg gac att ccc cct gag ctt gta gcg aag cct ctg gaa gac ctg gac 297
Gly Asp Ile Pro Pro Glu Leu Val Ala Lys Pro Leu Glu Asp Leu Asp
70 75 80

cca ttc tac aaa gac cat aag aca ttc atg gtg ttg aac aag aag aga 345
Pro Phe Tyr Lys Asp His Lys Thr Phe Met Val Leu Asn Lys Lys Arg
85 90 95

aca att tat cgc ttc agc gcc aag cgg gcc ttg ttc att ctg ggg cct 393
Thr Ile Tyr Arg Phe Ser Ala Lys Arg Ala Leu Phe Ile Leu Gly Pro
100 105 110

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| ttt | aat | ccc | ctc | aga | agc | tta | atg | att | cgt | atc | tct | gtc | cat | tca | gtc | 441 |
| Phe | Asn | Pro | Leu | Arg | Ser | Leu | Met | Ile | Arg | Ile | Ser | Val | His | Ser | Val | |
| 115 | | | | | 120 | | | | | 125 | | | | | 130 | |
| | | | | | | | | | | | | | | | | |
| ttt | agc | atg | ttc | atc | atc | tgc | acg | gtg | atc | atc | aac | tgt | atg | ttc | atg | 489 |
| Phe | Ser | Met | Phe | Ile | Ile | Cys | Thr | Val | Ile | Ile | Asn | Cys | Met | Phe | Met | |
| | | | | 135 | | | | | 140 | | | | | | 145 | |
| | | | | | | | | | | | | | | | | |
| gcg | aat | tct | atg | gag | aga | agt | ttc | gac | aac | gac | att | ccc | gaa | tac | gtc | 537 |
| Ala | Asn | Ser | Met | Glu | Arg | Ser | Phe | Asp | Asn | Asp | Ile | Pro | Glu | Tyr | Val | |
| | | | 150 | | | | | 155 | | | | | 160 | | | |
| | | | | | | | | | | | | | | | | |
| ttc | att | ggg | att | tat | att | tta | gaa | gct | gtg | att | aaa | ata | ttg | gca | aga | 585 |
| Phe | Ile | Gly | Ile | Tyr | Ile | Leu | Glu | Ala | Val | Ile | Lys | Ile | Leu | Ala | Arg | |
| | | 165 | | | | | 170 | | | | | 175 | | | | |
| | | | | | | | | | | | | | | | | |
| ggc | ttc | att | gtg | gat | gag | ttt | tcc | ttc | ctc | cga | gat | ccg | tgg | aac | tgg | 633 |
| Gly | Phe | Ile | Val | Asp | Glu | Phe | Ser | Phe | Leu | Arg | Asp | Pro | Trp | Asn | Trp | |
| | 180 | | | | | 185 | | | | | 190 | | | | | |
| | | | | | | | | | | | | | | | | |
| ctg | gac | ttc | att | gtc | att | gga | aca | gcg | atc | gca | act | tgt | ttt | ccg | ggc | 681 |
| Leu | Asp | Phe | Ile | Val | Ile | Gly | Thr | Ala | Ile | Ala | Thr | Cys | Phe | Pro | Gly | |
| | 195 | | | | 200 | | | | | 205 | | | | | 210 | |
| | | | | | | | | | | | | | | | | |
| agc | caa | gtc | aat | ctt | tca | gct | ctt | cgt | acc | ttc | cga | gtg | ttc | aga | gct | 729 |
| Ser | Gln | Val | Asn | Leu | Ser | Ala | Leu | Arg | Thr | Phe | Arg | Val | Phe | Arg | Ala | |
| | | | | 215 | | | | 220 | | | | | | 225 | | |
| | | | | | | | | | | | | | | | | |
| ctg | aag | gcg | att | tca | ggt | atc | tca | ggt | ctg | aag | gtc | atc | gta | ggt | gcc | 777 |
| Leu | Lys | Ala | Ile | Ser | Val | Ile | Ser | Gly | Leu | Lys | Val | Ile | Val | Gly | Ala | |
| | | | 230 | | | | | 235 | | | | | 240 | | | |
| | | | | | | | | | | | | | | | | |
| ctg | ctg | cgc | tgc | gtg | aag | aag | ctg | gta | gac | gtg | atg | gtc | ctc | act | ctc | 825 |
| Leu | Leu | Arg | Ser | Val | Lys | Lys | Leu | Val | Asp | Val | Met | Val | Leu | Thr | Leu | |
| | | 245 | | | | | 250 | | | | | 255 | | | | |
| | | | | | | | | | | | | | | | | |
| ttc | tgc | ctc | agc | atc | ttt | gcc | ctg | gtc | ggt | cag | cag | ctg | ttc | atg | gga | 873 |
| Phe | Cys | Leu | Ser | Ile | Phe | Ala | Leu | Val | Gly | Gln | Gln | Leu | Phe | Met | Gly | |
| | 260 | | | | | 265 | | | | 270 | | | | | | |
| | | | | | | | | | | | | | | | | |
| att | ctg | aac | cag | aag | tgt | att | aag | cac | aac | tgt | ggc | ccc | aac | cct | gca | 921 |
| Ile | Leu | Asn | Gln | Lys | Cys | Ile | Lys | His | Asn | Cys | Gly | Pro | Asn | Pro | Ala | |
| | 275 | | | | 280 | | | | 285 | | | | | | 290 | |
| | | | | | | | | | | | | | | | | |
| tcc | aac | aag | gat | tgc | ttt | gaa | aag | gaa | aaa | gat | agc | gaa | gac | ttc | ata | 969 |
| Ser | Asn | Lys | Asp | Cys | Phe | Glu | Lys | Glu | Lys | Asp | Ser | Glu | Asp | Phe | Ile | |
| | | | | 295 | | | | 300 | | | | | | 305 | | |
| | | | | | | | | | | | | | | | | |
| atg | tgt | ggt | acc | tgg | ctc | ggc | agc | aga | ccc | tgt | ccc | aat | ggt | tct | acg | 1017 |
| Met | Cys | Gly | Thr | Trp | Leu | Gly | Ser | Arg | Pro | Cys | Pro | Asn | Gly | Ser | Thr | |
| | | | 310 | | | | | 315 | | | | | 320 | | | |
| | | | | | | | | | | | | | | | | |
| tgc | gat | aaa | acc | aca | ttg | aac | cca | gac | aat | aat | tat | aca | aag | ttt | gac | 1065 |
| Cys | Asp | Lys | Thr | Thr | Leu | Asn | Pro | Asp | Asn | Asn | Tyr | Thr | Lys | Phe | Asp | |
| | | 325 | | | | | 330 | | | | | 335 | | | | |
| | | | | | | | | | | | | | | | | |
| aac | ttt | ggc | tgg | tcc | ttt | ctc | gcc | atg | ttc | cgg | gtt | atg | act | caa | gac | 1113 |
| Asn | Phe | Gly | Trp | Ser | Phe | Leu | Ala | Met | Phe | Arg | Val | Met | Thr | Gln | Asp | |
| | 340 | | | | | 345 | | | | 350 | | | | | | |
| | | | | | | | | | | | | | | | | |
| tcc | tgg | gag | agg | ctt | tac | cga | cag | atc | ctg | cgg | acc | tct | ggg | atc | tac | 1161 |

| | | | | | | | | | | | | | | | | |
|------------|-----|-----|-----|-----|------------|-----|-----|-----|-----|------------|-----|-----|-----|-----|------------|------|
| Ser 355 | Trp | Glu | Arg | Leu | Tyr 360 | Arg | Gln | Ile | Leu | Arg 365 | Thr | Ser | Gly | Ile | Tyr 370 | |
| ttt | gtc | ttc | ttc | ttc | gtg | gtg | gtc | atc | ttc | ctg | ggc | tcc | ttc | tac | ctg | 1209 |
| Phe | Val | Phe | Phe | Phe | Val | Val | Val | Ile | Phe | Leu | Gly | Ser | Phe | Tyr | Leu | |
| | | | | 375 | | | | | 380 | | | | | 385 | | |
| ctt | aac | cta | acc | ctg | gct | gtt | gtc | acc | atg | gct | tat | gaa | gaa | cag | aac | 1257 |
| Leu | Asn | Leu | Thr | Leu | Ala | Val | Val | Thr | Met | Ala | Tyr | Glu | Glu | Gln | Asn | |
| | | | 390 | | | | | 395 | | | | | 400 | | | |
| aga | aat | gta | gct | gct | gag | aca | gag | gcc | aag | gag | aaa | atg | ttt | cag | gaa | 1305 |
| Arg | Asn | Val | Ala | Ala | Glu | Thr | Glu | Ala | Lys | Glu | Lys | Met | Phe | Gln | Glu | |
| | | 405 | | | | | 410 | | | | | 415 | | | | |
| gcc | cag | cag | ctg | tta | agg | gag | gag | aag | gag | gct | ctg | gtt | gcc | atg | gga | 1353 |
| Ala | Gln | Gln | Leu | Leu | Arg | Glu | Glu | Lys | Glu | Ala | Leu | Val | Ala | Met | Gly | |
| | 420 | | | | | 425 | | | | | 430 | | | | | |
| att | gac | aga | agt | tcc | ctt | aat | tcc | ctt | caa | gct | tca | tcc | ttt | tcc | ccg | 1401 |
| Ile | Asp | Arg | Ser | Ser | Leu | Asn | Ser | Leu | Gln | Ala | Ser | Ser | Phe | Ser | Pro | |
| 435 | | | | | 440 | | | | 445 | | | | | | 450 | |
| aag | aag | agg | aag | ttt | ttc | ggt | agt | aag | aca | aga | aag | tcc | ttc | ttt | atg | 1449 |
| Lys | Lys | Arg | Lys | Phe | Phe | Gly | Ser | Lys | Thr | Arg | Lys | Ser | Phe | Phe | Met | |
| | | | | 455 | | | | | 460 | | | | | 465 | | |
| aga | ggg | tcc | aag | acg | gcc | caa | gcc | tca | gcg | tct | gat | tca | gag | gac | gat | 1497 |
| Arg | Gly | Ser | Lys | Thr | Ala | Gln | Ala | Ser | Ala | Ser | Asp | Ser | Glu | Asp | Asp | |
| | | | 470 | | | | 475 | | | | | | 480 | | | |
| gcc | tct | aaa | aat | cca | cag | ctc | ctt | gag | cag | acc | aaa | cga | ctg | tcc | cag | 1545 |
| Ala | Ser | Lys | Asn | Pro | Gln | Leu | Leu | Glu | Gln | Thr | Lys | Arg | Leu | Ser | Gln | |
| | | 485 | | | | 490 | | | | | | 495 | | | | |
| aac | ttg | cca | gtg | gat | ctc | ttt | gat | gag | cac | gtg | gac | ccc | ctc | cac | agg | 1593 |
| Asn | Leu | Pro | Val | Asp | Leu | Phe | Asp | Glu | His | Val | Asp | Pro | Leu | His | Arg | |
| | 500 | | | | | 505 | | | | | 510 | | | | | |
| cag | aga | gcg | ctg | agc | gct | gtc | agt | atc | tta | acc | atc | acc | atg | cag | gaa | 1641 |
| Gln | Arg | Ala | Leu | Ser | Ala | Val | Ser | Ile | Leu | Thr | Ile | Thr | Met | Gln | Glu | |
| 515 | | | | | 520 | | | | 525 | | | | | | 530 | |
| caa | gaa | aaa | ttc | cag | gag | cct | tgt | ttc | cca | tgt | ggg | aaa | aat | ttg | gcc | 1689 |
| Gln | Glu | Lys | Phe | Gln | Glu | Pro | Cys | Phe | Pro | Cys | Gly | Lys | Asn | Leu | Ala | |
| | | | | 535 | | | | | 540 | | | | | 545 | | |
| tct | aag | tac | ctg | gtg | tgg | gac | tgt | agc | cct | cag | tgg | ctg | tgc | ata | aag | 1737 |
| Ser | Lys | Tyr | Leu | Val | Trp | Asp | Cys | Ser | Pro | Gln | Trp | Leu | Cys | Ile | Lys | |
| | | | 550 | | | | 555 | | | | | | 560 | | | |
| aag | gtc | ctg | cgg | acc | atc | atg | acg | gat | ccc | ttt | act | gag | ctg | gcc | atc | 1785 |
| Lys | Val | Leu | Arg | Thr | Ile | Met | Thr | Asp | Pro | Phe | Thr | Glu | Leu | Ala | Ile | |
| | | 565 | | | | | 570 | | | | | 575 | | | | |
| acc | atc | tgc | atc | atc | atc | aat | acc | gtt | ttc | tta | gcc | gtg | gag | cac | cac | 1833 |
| Thr | Ile | Cys | Ile | Ile | Ile | Asn | Thr | Val | Phe | Leu | Ala | Val | Glu | His | His | |
| | 580 | | | | | 585 | | | | | 590 | | | | | |
| aac | atg | gat | gac | aac | tta | aag | acc | ata | ctg | aaa | ata | gga | aac | tgg | gtt | 1881 |
| Asn | Met | Asp | Asp | Asn | Leu | Lys | Thr | Ile | Leu | Lys | Ile | Gly | Asn | Trp | Val | |

| 595 | 600 | 605 | 610 | |
|-----------------|---------------------|---------------------|-----------------|------|
| ttc acg gga att | ttc ata gcg gaa atg | tgt ctc aag atc atc | gcg ctc | 1929 |
| Phe Thr Gly Ile | Phe Ile Ala Glu Met | Cys Leu Lys Ile Ile | Ala Leu | |
| | 615 | 620 | 625 | |
| gac cct tac cac | tac ttc cgg cac | ggc tgg aat gtt ttt | gac agc atc | 1977 |
| Asp Pro Tyr His | Tyr Phe Arg His | Gly Trp Asn Val Phe | Asp Ser Ile | |
| | 630 | 635 | 640 | |
| gtg gcc ctc ctg | agt ctc gct gat | gtg ctc tac aac | aca ctg tct gat | 2025 |
| Val Ala Leu Leu | Ser Leu Ala Asp | Val Leu Tyr Asn | Thr Leu Ser Asp | |
| | 645 | 650 | 655 | |
| aac aat agg tct | ttc ttg gct tcc | ctc aga gtg ctg | agg gtc ttc aag | 2073 |
| Asn Asn Arg Ser | Phe Leu Ala Ser | Leu Arg Val Leu | Arg Val Phe Lys | |
| | 660 | 665 | 670 | |
| tta gcc aaa tcc | tgg ccc acg tta | aac act ctc att | aag atc atc ggc | 2121 |
| Leu Ala Lys Ser | Trp Pro Thr Leu | Asn Thr Leu Ile | Lys Ile Ile Gly | |
| | 680 | 685 | 690 | |
| cac tcc gtg ggc | gcg ctt gga aac | ctg act gtg gtc | ctg act atc gtg | 2169 |
| His Ser Val Gly | Ala Leu Gly Asn | Leu Thr Val Val | Leu Thr Ile Val | |
| | 695 | 700 | 705 | |
| gtc ttc atc ttt | tct gtg gtg ggc | atg cgg ctc ttc | ggc acc aag ttt | 2217 |
| Val Phe Ile Phe | Ser Val Val Gly | Met Arg Leu Phe | Gly Thr Lys Phe | |
| | 710 | 715 | 720 | |
| aac aag acc gcc | tac gcc acc cag | gag cgg ccc agg | cgg cgc tgg cac | 2265 |
| Asn Lys Thr Ala | Tyr Ala Thr Gln | Glu Arg Pro Arg | Arg Arg Trp His | |
| | 725 | 730 | 735 | |
| atg gat aat ttc | tac cac tcc ttc | ctg gtg gtg ttc | cgc atc ctc tgt | 2313 |
| Met Asp Asn Phe | Tyr His Ser Phe | Leu Val Val Phe | Arg Ile Leu Cys | |
| | 740 | 745 | 750 | |
| ggg gaa tgg atc | gag aac atg tgg | ggc tgc atg cag | gat atg gac ggc | 2361 |
| Gly Glu Trp Ile | Glu Asn Met Trp | Gly Cys Met Gln | Asp Met Asp Gly | |
| | 755 | 760 | 770 | |
| tcc ccg ttg tgc | atc att gtc ttt | gtc ctg ata atg | gtg atc ggg aag | 2409 |
| Ser Pro Leu Cys | Ile Ile Val Phe | Val Leu Ile Met | Val Ile Gly Lys | |
| | 775 | 780 | 785 | |
| ctt gtg gtg ctt | aac ctc ttc att | gcc ttg ctg ctc | aat tcc ttc agc | 2457 |
| Leu Val Val Leu | Asn Leu Phe Ile | Ala Leu Leu Leu | Asn Ser Phe Ser | |
| | 790 | 795 | 800 | |
| aat gag gag aag | gat ggg agc ctg | gaa gga gag acc | agg aaa acc aaa | 2505 |
| Asn Glu Glu Lys | Asp Gly Ser Leu | Glu Gly Glu Thr | Arg Lys Thr Lys | |
| | 805 | 810 | 815 | |
| gtg cag cta gcc | ctg gat cgg ttc | cgc cgg gcc ttc | tcc ttc atg ctg | 2553 |
| Val Gln Leu Ala | Leu Asp Arg Phe | Arg Arg Ala Phe | Ser Phe Met Leu | |
| | 820 | 825 | 830 | |
| cac gct ctt cag | agt ttt tgt tgc | aag aaa tgc agg | agg aaa aac tcg | 2601 |
| His Ala Leu Gln | Ser Phe Cys Cys | Lys Lys Cys Arg | Arg Lys Asn Ser | |
| | 835 | 840 | 845 | 850 |

| | |
|---|------|
| cca aag cca aaa gag aca aca gaa agc ttt gct ggt gag aat aaa gac | 2649 |
| Pro Lys Pro Lys Glu Thr Thr Glu Ser Phe Ala Gly Glu Asn Lys Asp | |
| 855 860 865 | |
| tca atc ctc ccg gat gcg agg ccc tgg aag gag tat gat aca gac atg | 2697 |
| Ser Ile Leu Pro Asp Ala Arg Pro Trp Lys Glu Tyr Asp Thr Asp Met | |
| 870 875 880 | |
| gct ttg tac act gga cag gcc ggg gct ccg ctg gcc cca ctc gca gag | 2745 |
| Ala Leu Tyr Thr Gly Gln Ala Gly Ala Pro Leu Ala Pro Leu Ala Glu | |
| 885 890 895 | |
| gta gag gac gat gtg gaa tat tgt ggt gaa ggc ggt gcc cta ccc acc | 2793 |
| Val Glu Asp Asp Val Glu Tyr Cys Gly Glu Gly Ala Leu Pro Thr | |
| 900 905 910 | |
| tca caa cat agt gct gga gtt cag gcc ggt gac ctc cct cca gag acc | 2841 |
| Ser Gln His Ser Ala Gly Val Gln Ala Gly Asp Leu Pro Pro Glu Thr | |
| 915 920 925 930 | |
| aag cag ctc act agc ccg gat gac caa ggg gtt gaa atg gaa gta ttt | 2889 |
| Lys Gln Leu Thr Ser Pro Asp Asp Gln Gly Val Glu Met Glu Val Phe | |
| 935 940 945 | |
| tct gaa gaa gat ctg cat tta agc ata cag agt cct cga aag aag tct | 2937 |
| Ser Glu Glu Asp Leu His Leu Ser Ile Gln Ser Pro Arg Lys Lys Ser | |
| 950 955 960 | |
| gac gca gtg agc atg ctc tcg gaa tgc agc aca att gac ctg aat gat | 2985 |
| Asp Ala Val Ser Met Leu Ser Glu Cys Ser Thr Ile Asp Leu Asn Asp | |
| 965 970 975 | |
| atc ttt aga aat tta cag aaa aca gtt tcc ccc aaa aag cag cca gat | 3033 |
| Ile Phe Arg Asn Leu Gln Lys Thr Val Ser Pro Lys Lys Gln Pro Asp | |
| 980 985 990 | |
| aga tgc ttt ccc aag ggc ctt agt tgt cac ttt cta tgc cac aaa | 3078 |
| Arg Cys Phe Pro Lys Gly Leu Ser Cys His Phe Leu Cys His Lys | |
| 995 1000 1005 | |
| aca gac aag aga aag tcc ccc tgg gtc ctg tgg tgg aac att cgg | 3123 |
| Thr Asp Lys Arg Lys Ser Pro Trp Val Leu Trp Trp Asn Ile Arg | |
| 1010 1015 1020 | |
| aaa acc tgc tac caa atc gtg aag cac agc tgg ttt gag agt ttc | 3168 |
| Lys Thr Cys Tyr Gln Ile Val Lys His Ser Trp Phe Glu Ser Phe | |
| 1025 1030 1035 | |
| ata atc ttt gtt att ctg ctg agc agt gga gcg ctg ata ttt gaa | 3213 |
| Ile Ile Phe Val Ile Leu Leu Ser Ser Gly Ala Leu Ile Phe Glu | |
| 1040 1045 1050 | |
| gat gtc aat ctc ccc agc cgg ccc caa gtt gag aaa tta cta agg | 3258 |
| Asp Val Asn Leu Pro Ser Arg Pro Gln Val Glu Lys Leu Leu Arg | |
| 1055 1060 1065 | |
| tgt acc gat aat att ttc aca ttt att ttc ctc ctg gaa atg atc | 3303 |
| Cys Thr Asp Asn Ile Phe Thr Phe Ile Phe Leu Glu Met Ile | |
| 1070 1075 1080 | |

| | | | | | | | | | | | | | | | |
|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|
| ctg | aag | tgg | gtg | gcc | ttt | gga | ttc | cgg | agg | tat | ttc | acc | agt | gcc | 3348 |
| Leu | Lys | Trp | Val | Ala | Phe | Gly | Phe | Arg | Arg | Tyr | Phe | Thr | Ser | Ala | |
| 1085 | | | | | 1090 | | | | | 1095 | | | | | |
| tgg | tgc | tgg | ctt | gat | ttc | ctc | att | gtg | gtg | gtg | tct | gtg | ctc | agt | 3393 |
| Trp | Cys | Trp | Leu | Asp | Phe | Leu | Ile | Val | Val | Val | Ser | Val | Leu | Ser | |
| 1100 | | | | | 1105 | | | | | 1110 | | | | | |
| ctc | atg | aat | cta | cca | agc | ttg | aag | tcc | ttc | cgg | act | ctg | cgg | gcc | 3438 |
| Leu | Met | Asn | Leu | Pro | Ser | Leu | Lys | Ser | Phe | Arg | Thr | Leu | Arg | Ala | |
| 1115 | | | | | 1120 | | | | | 1125 | | | | | |
| ctg | aga | cct | ctg | cgg | gcg | ctg | tcc | cag | ttt | gaa | gga | atg | aag | gtt | 3483 |
| Leu | Arg | Pro | Leu | Arg | Ala | Leu | Ser | Gln | Phe | Glu | Gly | Met | Lys | Val | |
| 1130 | | | | | 1135 | | | | | 1140 | | | | | |
| gtc | gtc | tac | gcc | ctg | atc | agc | gcc | ata | cct | gcc | att | ctc | aat | gtc | 3528 |
| Val | Val | Tyr | Ala | Leu | Ile | Ser | Ala | Ile | Pro | Ala | Ile | Leu | Asn | Val | |
| 1145 | | | | | 1150 | | | | | 1155 | | | | | |
| ttg | ctg | gtc | tgc | ctc | att | ttc | tgg | ctc | gta | ttt | tgt | atc | ttg | gga | 3573 |
| Leu | Leu | Val | Cys | Leu | Ile | Phe | Trp | Leu | Val | Phe | Cys | Ile | Leu | Gly | |
| 1160 | | | | | 1165 | | | | | 1170 | | | | | |
| gta | aat | tta | ttt | tct | ggg | aag | ttt | gga | agg | tgc | att | aac | ggg | aca | 3618 |
| Val | Asn | Leu | Phe | Ser | Gly | Lys | Phe | Gly | Arg | Cys | Ile | Asn | Gly | Thr | |
| 1175 | | | | | 1180 | | | | | 1185 | | | | | |
| gac | ata | aat | atg | tat | ttg | gat | ttt | acc | gaa | gtt | ccg | aac | cga | agc | 3663 |
| Asp | Ile | Asn | Met | Tyr | Leu | Asp | Phe | Thr | Glu | Val | Pro | Asn | Arg | Ser | |
| 1190 | | | | | 1195 | | | | | 1200 | | | | | |
| caa | tgt | aac | att | agt | aat | tac | tcg | tgg | aag | gtc | ccg | cag | gtc | aac | 3708 |
| Gln | Cys | Asn | Ile | Ser | Asn | Tyr | Ser | Trp | Lys | Val | Pro | Gln | Val | Asn | |
| 1205 | | | | | 1210 | | | | | 1215 | | | | | |
| ttt | gac | aac | gtg | ggg | aat | gcc | tat | ctc | gcc | ctg | ctg | caa | gtg | gca | 3753 |
| Phe | Asp | Asn | Val | Gly | Asn | Ala | Tyr | Leu | Ala | Leu | Leu | Gln | Val | Ala | |
| 1220 | | | | | 1225 | | | | | 1230 | | | | | |
| acc | tat | aag | ggc | tgg | ctg | gaa | atc | atg | aat | gct | gct | gtc | gat | tcc | 3798 |
| Thr | Tyr | Lys | Gly | Trp | Leu | Glu | Ile | Met | Asn | Ala | Ala | Val | Asp | Ser | |
| 1235 | | | | | 1240 | | | | | 1245 | | | | | |
| aga | gag | aaa | gac | gag | cag | ccg | gac | ttt | gag | gcg | aac | ctc | tac | gcg | 3843 |
| Arg | Glu | Lys | Asp | Glu | Gln | Pro | Asp | Phe | Glu | Ala | Asn | Leu | Tyr | Ala | |
| 1250 | | | | | 1255 | | | | | 1260 | | | | | |
| tat | ctc | tac | ttt | gtg | gtt | ttt | atc | atc | ttc | ggc | tcc | ttc | ttt | acc | 3888 |
| Tyr | Leu | Tyr | Phe | Val | Val | Phe | Ile | Ile | Phe | Gly | Ser | Phe | Phe | Thr | |
| 1265 | | | | | 1270 | | | | | 1275 | | | | | |
| ctg | aac | ctc | ttt | atc | ggt | gtt | att | att | gac | aac | ttc | aat | cag | cag | 3933 |
| Leu | Asn | Leu | Phe | Ile | Gly | Val | Ile | Ile | Asp | Asn | Phe | Asn | Gln | Gln | |
| 1280 | | | | | 1285 | | | | | 1290 | | | | | |
| cag | aaa | aag | tta | ggt | ggc | caa | gac | att | ttt | atg | aca | gaa | gaa | cag | 3978 |
| Gln | Lys | Lys | Leu | Gly | Gly | Gln | Asp | Ile | Phe | Met | Thr | Glu | Glu | Gln | |
| 1295 | | | | | 1300 | | | | | 1305 | | | | | |
| aag | aaa | tat | tac | aat | gca | atg | aaa | aag | tta | gga | acc | aag | aaa | cct | 4023 |

| | | | | | | | | | | | | | | | |
|--------------------|------------|------------|------------|------------|--------------------|------------|------------|------------|------------|--------------------|------------|------------|------------|------------|------|
| Lys 1310 | Lys | Tyr | Tyr | Asn | Ala 1315 | Met | Lys | Lys | Leu | Gly 1320 | Thr | Lys | Lys | Pro | |
| caa Gln 1325 | aag Lys | ccc Pro | atc Ile | cca Pro | agg Arg 1330 | ccc Pro | ctg Leu | aac Asn | aaa Lys | tgt Cys 1335 | caa Gln | gcc Ala | ttt Phe | gtg Val | 4068 |
| ttc Phe 1340 | gac Asp | ctg Leu | gtc Val | aca Thr | agc Ser 1345 | cag Gln | gtc Val | ttt Phe | gac Asp | gtc Val 1350 | atc Ile | att Ile | ctg Leu | ggc Gly | 4113 |
| ctt Leu 1355 | att Ile | gtc Val | tta Leu | aat Asn | atg Met 1360 | att Ile | atc Ile | atg Met | atg Met | gct Ala 1365 | gaa Glu | tct Ser | gcc Ala | gac Asp | 4158 |
| cag Gln 1370 | ccc Pro | aaa Lys | gat Asp | gtg Val | aag Lys 1375 | aaa Lys | acc Thr | ttt Phe | gat Asp | atc Ile 1380 | ctc Leu | aac Asn | ata Ile | gcc Ala | 4203 |
| ttc Phe 1385 | gtg Val | gtc Val | atc Ile | ttt Phe | acc Thr 1390 | ata Ile | gag Glu | tgt Cys | ctc Leu | atc Ile 1395 | aaa Lys | gtc Val | ttt Phe | gct Ala | 4248 |
| ttg Leu 1400 | agg Arg | caa Gln | cac His | tac Tyr | ttc Phe 1405 | acc Thr | aat Asn | ggc Gly | tgg Trp | aac Asn 1410 | tta Leu | ttt Phe | gat Asp | tgt Cys | 4293 |
| gtg Val 1415 | gtc Val | gtg Val | gtt Val | ctt Leu | tct Ser 1420 | atc Ile | att Ile | agt Ser | acc Thr | ctg Leu 1425 | gtt Val | tcc Ser | cgc Arg | ttg Leu | 4338 |
| gag Glu 1430 | gac Asp | agt Ser | gac Asp | att Ile | tct Ser 1435 | ttc Phe | ccg Pro | ccc Pro | acg Thr | ctc Leu 1440 | ttc Phe | aga Arg | gtc Val | gtc Val | 4383 |
| cgc Arg 1445 | ttg Leu | gct Ala | cgg Arg | att Ile | ggc Gly 1450 | cga Arg | atc Ile | ctc Leu | agg Arg | ctg Leu 1455 | gtc Val | cgg Arg | gct Ala | gcc Ala | 4428 |
| cgg Arg 1460 | gga Gly | atc Ile | agg Arg | acc Thr | ctc Leu 1465 | ctc Leu | ttt Phe | gct Ala | ttg Leu | atg Met 1470 | atg Met | tct Ser | ctc Leu | ccc Pro | 4473 |
| tct Ser 1475 | ctc Leu | ttc Phe | aac Asn | atc Ile | ggc Gly 1480 | ctg Leu | ctg Leu | ctc Leu | ttc Phe | ctg Leu 1485 | gtg Val | atg Met | ttc Phe | att Ile | 4518 |
| tac Tyr 1490 | gcc Ala | atc Ile | ttt Phe | ggg Gly | atg Met 1495 | agc Ser | tgg Trp | ttt Phe | tcc Ser | aaa Lys 1500 | gtg Val | aag Lys | aag Lys | ggc Gly | 4563 |
| tcc Ser 1505 | ggg Gly | atc Ile | gac Asp | gac Asp | atc Ile 1510 | ttc Phe | aac Asn | ttc Phe | gag Glu | acc Thr 1515 | ttt Phe | acg Thr | ggc Gly | agc Ser | 4608 |
| atg Met 1520 | ctg Leu | tgc Cys | ctc Leu | ttc Phe | cag Gln 1525 | ata Ile | acc Thr | act Thr | tcg Ser | gct Ala 1530 | ggc Gly | tgg Trp | gat Asp | acc Thr | 4653 |
| ctc Leu | ctc Leu | aac Asn | ccc Pro | atg Met | ctg Leu | gag Glu | gca Ala | aaa Lys | gaa Glu | cac His | tgc Cys | aac Asn | tcc Ser | tcc Ser | 4698 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------|-----|-----|-----|-----|-----|-----|------------|-----|-----|-----|-----------|-----|-----|-----|------------|------|--|--|--|--|--|------|--|--|--|--|--|--|--|--|--|--|
| 1535 | | | | | | | | | | | 1540 | | | | | | | | | | | 1545 | | | | | | | | | | |
| tcc | caa | gac | agc | tgt | cag | cag | ccg | cag | ata | gcc | gtc | gtc | tac | ttc | 4743 | | | | | | | | | | | | | | | | | |
| Ser | Gln | Asp | Ser | Cys | Gln | Gln | Pro | Gln | Ile | Ala | Val | Val | Tyr | Phe | | | | | | | | | | | | | | | | | | |
| 1550 | | | | | | | | | | | 1555 | | | | | | | | | | | 1560 | | | | | | | | | | |
| gtc | agt | tac | atc | atc | atc | tcc | ttc | ctc | atc | gtg | gtc | aac | atg | tac | 4788 | | | | | | | | | | | | | | | | | |
| Val | Ser | Tyr | Ile | Ile | Ile | Ser | Phe | Leu | Ile | Val | Val | Asn | Met | Tyr | | | | | | | | | | | | | | | | | | |
| 1565 | | | | | | | | | | | 1570 | | | | | | | | | | | 1575 | | | | | | | | | | |
| atc | gct | gtg | atc | ctc | gag | aac | ttc | aac | aca | gcc | acg | gag | gag | agc | 4833 | | | | | | | | | | | | | | | | | |
| Ile | Ala | Val | Ile | Leu | Glu | Asn | Phe | Asn | Thr | Ala | Thr | Glu | Glu | Ser | | | | | | | | | | | | | | | | | | |
| 1580 | | | | | | | | | | | 1585 | | | | | | | | | | | 1590 | | | | | | | | | | |
| gag | gac | cct | ctg | gga | gag | gac | gac | ttt | gaa | atc | ttc | tat | gag | gtc | 4878 | | | | | | | | | | | | | | | | | |
| Glu | Asp | Pro | Leu | Gly | Glu | Asp | Asp | Phe | Glu | Ile | Phe | Tyr | Glu | Val | | | | | | | | | | | | | | | | | | |
| 1595 | | | | | | | | | | | 1600 | | | | | | | | | | | 1605 | | | | | | | | | | |
| tgg | gag | aag | ttt | gac | ccc | gag | gcg | tcg | cag | ttc | atc | cag | tat | tcg | 4923 | | | | | | | | | | | | | | | | | |
| Trp | Glu | Lys | Phe | Asp | Pro | Glu | Ala | Ser | Gln | Phe | Ile | Gln | Tyr | Ser | | | | | | | | | | | | | | | | | | |
| 1610 | | | | | | | | | | | 1615 | | | | | | | | | | | 1620 | | | | | | | | | | |
| gcc | ctc | tct | gac | ttt | gcg | gac | gcc | ctg | ccg | gag | ccg | ttg | cgt | gtg | 4968 | | | | | | | | | | | | | | | | | |
| Ala | Leu | Ser | Asp | Phe | Ala | Asp | Ala | Leu | Pro | Glu | Pro | Leu | Arg | Val | | | | | | | | | | | | | | | | | | |
| 1625 | | | | | | | | | | | 1630 | | | | | | | | | | | 1635 | | | | | | | | | | |
| gcc | aag | ccg | aat | aag | ttt | cag | ttt | cta | gtg | atg | gac | ttg | ccc | atg | 5013 | | | | | | | | | | | | | | | | | |
| Ala | Lys | Pro | Asn | Lys | Phe | Gln | Phe | Leu | Val | Met | Asp | Leu | Pro | Met | | | | | | | | | | | | | | | | | | |
| 1640 | | | | | | | | | | | 1645 | | | | | | | | | | | 1650 | | | | | | | | | | |
| gtg | atg | ggc | gac | cgc | ctc | cat | tgc | atg | gat | gtt | ctc | ttt | gct | ttc | 5058 | | | | | | | | | | | | | | | | | |
| Val | Met | Gly | Asp | Arg | Leu | His | Cys | Met | Asp | Val | Leu | Phe | Ala | Phe | | | | | | | | | | | | | | | | | | |
| 1655 | | | | | | | | | | | 1660 | | | | | | | | | | | 1665 | | | | | | | | | | |
| act | acc | agg | gtc | ctc | ggg | gac | tcc | agc | ggc | ttg | gat | acc | atg | aaa | 5103 | | | | | | | | | | | | | | | | | |
| Thr | Thr | Arg | Val | Leu | Gly | Asp | Ser | Ser | Gly | Leu | Asp | Thr | Met | Lys | | | | | | | | | | | | | | | | | | |
| 1670 | | | | | | | | | | | 1675 | | | | | | | | | | | 1680 | | | | | | | | | | |
| acc | atg | atg | gag | gag | aag | ttt | atg | gag | gcc | aac | cct | ttt | aag | aag | 5148 | | | | | | | | | | | | | | | | | |
| Thr | Met | Met | Glu | Glu | Lys | Phe | Met | Glu | Ala | Asn | Pro | Phe | Lys | Lys | | | | | | | | | | | | | | | | | | |
| 1685 | | | | | | | | | | | 1690 | | | | | | | | | | | 1695 | | | | | | | | | | |
| ctc | tac | gag | ccc | ata | gtc | acc | acc | acc | aag | agg | aag | gag | gag | gag | 5193 | | | | | | | | | | | | | | | | | |
| Leu | Tyr | Glu | Pro | Ile | Val | Thr | Thr | Thr | Lys | Arg | Lys | Glu | Glu | Glu | | | | | | | | | | | | | | | | | | |
| 1700 | | | | | | | | | | | 1705 | | | | | | | | | | | 1710 | | | | | | | | | | |
| caa | ggc | gcc | gcc | gtc | atc | cag | agg | gcc | tac | cgg | aaa | cac | atg | gag | 5238 | | | | | | | | | | | | | | | | | |
| Gln | Gly | Ala | Ala | Val | Ile | Gln | Arg | Ala | Tyr | Arg | Lys | His | Met | Glu | | | | | | | | | | | | | | | | | | |
| 1715 | | | | | | | | | | | 1720 | | | | | | | | | | | 1725 | | | | | | | | | | |
| aag | atg | gtc | aaa | ctg | agg | ctg | aag | gac | agg | tca | agt | tca | tcg | cac | 5283 | | | | | | | | | | | | | | | | | |
| Lys | Met | Val | Lys | Leu | Arg | Leu | Lys | Asp | Arg | Ser | Ser | Ser | Ser | His | | | | | | | | | | | | | | | | | | |
| 1730 | | | | | | | | | | | 1735 | | | | | | | | | | | 1740 | | | | | | | | | | |
| cag | gtg | ttt | tgc | aat | gga | gac | ttg | tcc | agc | ttg | gat | gtg | gcc | aag | 5328 | | | | | | | | | | | | | | | | | |
| Gln | Val | Phe | Cys | Asn | Gly | Asp | Leu | Ser | Ser | Leu | Asp | Val | Ala | Lys | | | | | | | | | | | | | | | | | | |
| 1745 | | | | | | | | | | | 1750 | | | | | | | | | | | 1755 | | | | | | | | | | |
| gtc | aag | gtt | cac | aat | gac | tga | accctcatct | | | | ccaccctac | | | | ctcactgcct | 5379 | | | | | | | | | | | | | | | | |
| Val | Lys | Val | His | Asn | Asp | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1760 | | | | | | | | | | | 1765 | | | | | | | | | | | | | | | | | | | | | |


```

cacagcttag cctccagcct ctggcgagca ggcggcagac tcaactgaaca caggccgttc 5439
gatctgtggt tttggctgaa cgaggtgaca ggttggcgtc cttttttaa tgactcttgg 5499
aaagatttca tgtagagaga tgtagaagg gactgcaaag gacaccgacc ataacggaag 5559
gcctggagga cagtccaact tacataaaga tgagaaacaa gaaggaaaga tcccaggaaa 5619
acttcagatt gtgttctcag tacattcccc aatgtgtctg ttcggtgttt tgagtatgtg 5679
acctgccaca tgtagctctt ttttgcattg acgtcaaac cctgcagtaa gttaatatgt 5739
tgctacgggt gttcctacca gcatcacaga attgggtgta tgactcaaac ctaaaagcat 5799
gactctgact tgtcagtcag caccgact ttcagacgct ccaatctctg tcccagggtg 5859
ctaacgaata aataggtaaa agaaaaaaaa aaaaaaaaaa aaaaaa 5905

```

```

<210> 2
<211> 1765
<212> PRT
<213> Rattus norvegicus

```

```
<400> 2
```

```

Met Glu Glu Arg Tyr Tyr Pro Val Ile Phe Pro Asp Glu Arg Asn Phe
1             5             10             15

```

```

Arg Pro Phe Thr Ser Asp Ser Leu Ala Ala Ile Glu Lys Arg Ile Ala
          20             25             30

```

```

Ile Gln Lys Glu Arg Lys Lys Ser Lys Asp Lys Ala Ala Ala Glu Pro
      35             40             45

```

```

Gln Pro Arg Pro Gln Leu Asp Leu Lys Ala Ser Arg Lys Leu Pro Lys
      50             55             60

```

```

Leu Tyr Gly Asp Ile Pro Pro Glu Leu Val Ala Lys Pro Leu Glu Asp
65             70             75             80

```

```

Leu Asp Pro Phe Tyr Lys Asp His Lys Thr Phe Met Val Leu Asn Lys
          85             90             95

```

```

Lys Arg Thr Ile Tyr Arg Phe Ser Ala Lys Arg Ala Leu Phe Ile Leu
      100             105             110

```

```

Gly Pro Phe Asn Pro Leu Arg Ser Leu Met Ile Arg Ile Ser Val His
      115             120             125

```

```

Ser Val Phe Ser Met Phe Ile Ile Cys Thr Val Ile Ile Asn Cys Met
      130             135             140

```

Phe Met Ala Asn Ser Met Glu Arg Ser Phe Asp Asn Asp Ile Pro Glu
145 150 155 160

Tyr Val Phe Ile Gly Ile Tyr Ile Leu Glu Ala Val Ile Lys Ile Leu
165 170 175

Ala Arg Gly Phe Ile Val Asp Glu Phe Ser Phe Leu Arg Asp Pro Trp
180 185 190

Asn Trp Leu Asp Phe Ile Val Ile Gly Thr Ala Ile Ala Thr Cys Phe
195 200 205

Pro Gly Ser Gln Val Asn Leu Ser Ala Leu Arg Thr Phe Arg Val Phe
210 215 220

Arg Ala Leu Lys Ala Ile Ser Val Ile Ser Gly Leu Lys Val Ile Val
225 230 235 240

Gly Ala Leu Leu Arg Ser Val Lys Lys Leu Val Asp Val Met Val Leu
245 250 255

Thr Leu Phe Cys Leu Ser Ile Phe Ala Leu Val Gly Gln Gln Leu Phe
260 265 270

Met Gly Ile Leu Asn Gln Lys Cys Ile Lys His Asn Cys Gly Pro Asn
275 280 285

Pro Ala Ser Asn Lys Asp Cys Phe Glu Lys Glu Lys Asp Ser Glu Asp
290 295 300

Phe Ile Met Cys Gly Thr Trp Leu Gly Ser Arg Pro Cys Pro Asn Gly
305 310 315 320

Ser Thr Cys Asp Lys Thr Thr Leu Asn Pro Asp Asn Asn Tyr Thr Lys
325 330 335

Phe Asp Asn Phe Gly Trp Ser Phe Leu Ala Met Phe Arg Val Met Thr
340 345 350

-----Gln Asp Ser Trp Glu Arg Leu Tyr Arg Gln Ile Leu Arg Thr Ser Gly
355 360 365

Ile Tyr Phe Val Phe Phe Phe Val Val Val Ile Phe Leu Gly Ser Phe
370 375 380

Tyr Leu Leu Asn Leu Thr Leu Ala Val Val Thr Met Ala Tyr Glu Glu
385 390 395 400

Gln Asn Arg Asn Val Ala Ala Glu Thr Glu Ala Lys Glu Lys Met Phe
405 410 415

Gln Glu Ala Gln Gln Leu Leu Arg Glu Glu Lys Glu Ala Leu Val Ala
420 425 430

Met Gly Ile Asp Arg Ser Ser Leu Asn Ser Leu Gln Ala Ser Ser Phe
435 440 445

Ser Pro Lys Lys Arg Lys Phe Phe Gly Ser Lys Thr Arg Lys Ser Phe
450 455 460

Phe Met Arg Gly Ser Lys Thr Ala Gln Ala Ser Ala Ser Asp Ser Glu
465 470 475 480

Asp Asp Ala Ser Lys Asn Pro Gln Leu Leu Glu Gln Thr Lys Arg Leu
485 490 495

Ser Gln Asn Leu Pro Val Asp Leu Phe Asp Glu His Val Asp Pro Leu
500 505 510

His Arg Gln Arg Ala Leu Ser Ala Val Ser Ile Leu Thr Ile Thr Met
515 520 525

Gln Glu Gln Glu Lys Phe Gln Glu Pro Cys Phe Pro Cys Gly Lys Asn
530 535 540

Leu Ala Ser Lys Tyr Leu Val Trp Asp Cys Ser Pro Gln Trp Leu Cys
545 550 555 560

Ile Lys Lys Val Leu Arg Thr Ile Met Thr Asp Pro Phe Thr Glu Leu
565 570 575

Ala Ile Thr Ile Cys Ile Ile Ile Asn Thr Val Phe Leu Ala Val Glu
580 585 590

His His Asn Met Asp Asp Asn Leu Lys Thr Ile Leu Lys Ile Gly Asn
595 600 605

Trp Val Phe Thr Gly Ile Phe Ile Ala Glu Met Cys Leu Lys Ile Ile
610 615 620

Ala Leu Asp Pro Tyr His Tyr Phe Arg His Gly Trp Asn Val Phe Asp
625 630 635 640

Ser Ile Val Ala Leu Leu Ser Leu Ala Asp Val Leu Tyr Asn Thr Leu
645 650 655

Ser Asp Asn Asn Arg Ser Phe Leu Ala Ser Leu Arg Val Leu Arg Val
660 665 670

Phe Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Thr Leu Ile Lys Ile
675 680 685

Ile Gly His Ser Val Gly Ala Leu Gly Asn Leu Thr Val Val Leu Thr
690 695 700

Ile Val Val Phe Ile Phe Ser Val Val Gly Met Arg Leu Phe Gly Thr
705 710 715 720

Lys Phe Asn Lys Thr Ala Tyr Ala Thr Gln Glu Arg Pro Arg Arg Arg
725 730 735

Trp His Met Asp Asn Phe Tyr His Ser Phe Leu Val Val Phe Arg Ile
740 745 750

Leu Cys Gly Glu Trp Ile Glu Asn Met Trp Gly Cys Met Gln Asp Met
755 760 765

Asp Gly Ser Pro Leu Cys Ile Ile Val Phe Val Leu Ile Met Val Ile
770 775 780

Gly Lys Leu Val Val Leu Asn Leu Phe Ile Ala Leu Leu Leu Asn Ser
785 790 795 800

Phe Ser Asn Glu Glu Lys Asp Gly Ser Leu Glu Gly Glu Thr Arg Lys
805 810 815

Thr Lys Val Gln Leu Ala Leu Asp Arg Phe Arg Arg Ala Phe Ser Phe
820 825 830

Met Leu His Ala Leu Gln Ser Phe Cys Cys Lys Lys Cys Arg Arg Lys
835 840 845

Asn Ser Pro Lys Pro Lys Glu Thr Thr Glu Ser Phe Ala Gly Glu Asn
850 855 860

Lys Asp Ser Ile Leu Pro Asp Ala Arg Pro Trp Lys Glu Tyr Asp Thr

| 865 | 870 | 875 | 880 |
|---|------|------|------|
| Asp Met Ala Leu Tyr Thr Gly Gln Ala Gly Ala Pro Leu Ala Pro Leu | 885 | 890 | 895 |
| Ala Glu Val Glu Asp Asp Val Glu Tyr Cys Gly Glu Gly Gly Ala Leu | 900 | 905 | 910 |
| Pro Thr Ser Gln His Ser Ala Gly Val Gln Ala Gly Asp Leu Pro Pro | 915 | 920 | 925 |
| Glu Thr Lys Gln Leu Thr Ser Pro Asp Asp Gln Gly Val Glu Met Glu | 930 | 935 | 940 |
| Val Phe Ser Glu Glu Asp Leu His Leu Ser Ile Gln Ser Pro Arg Lys | 945 | 950 | 955 |
| Lys Ser Asp Ala Val Ser Met Leu Ser Glu Cys Ser Thr Ile Asp Leu | 965 | 970 | 975 |
| Asn Asp Ile Phe Arg Asn Leu Gln Lys Thr Val Ser Pro Lys Lys Gln | 980 | 985 | 990 |
| Pro Asp Arg Cys Phe Pro Lys Gly Leu Ser Cys His Phe Leu Cys His | 995 | 1000 | 1005 |
| Lys Thr Asp Lys Arg Lys Ser Pro Trp Val Leu Trp Trp Asn Ile | 1010 | 1015 | 1020 |
| Arg Lys Thr Cys Tyr Gln Ile Val Lys His Ser Trp Phe Glu Ser | 1025 | 1030 | 1035 |
| Phe Ile Ile Phe Val Ile Leu Leu Ser Ser Gly Ala Leu Ile Phe | 1040 | 1045 | 1050 |
| Glu Asp Val Asn Leu Pro Ser Arg Pro Gln Val Glu Lys Leu Leu | 1055 | 1060 | 1065 |
| Arg Cys Thr Asp Asn Ile Phe Thr Phe Ile Phe Leu Leu Glu Met | 1070 | 1075 | 1080 |
| Ile Leu Lys Trp Val Ala Phe Gly Phe Arg Arg Tyr Phe Thr Ser | 1085 | 1090 | 1095 |
| Ala Trp Cys Trp Leu Asp Phe Leu Ile Val Val Val Ser Val Leu | 1100 | 1105 | 1110 |

Ser Leu Met Asn Leu Pro Ser Leu Lys Ser Phe Arg Thr Leu Arg
 1115 1120 1125

Ala Leu Arg Pro Leu Arg Ala Leu Ser Gln Phe Glu Gly Met Lys
 1130 1135 1140

Val Val Val Tyr Ala Leu Ile Ser Ala Ile Pro Ala Ile Leu Asn
 1145 1150 1155

Val Leu Leu Val Cys Leu Ile Phe Trp Leu Val Phe Cys Ile Leu
 1160 1165 1170

Gly Val Asn Leu Phe Ser Gly Lys Phe Gly Arg Cys Ile Asn Gly
 1175 1180 1185

Thr Asp Ile Asn Met Tyr Leu Asp Phe Thr Glu Val Pro Asn Arg
 1190 1195 1200

Ser Gln Cys Asn Ile Ser Asn Tyr Ser Trp Lys Val Pro Gln Val
 1205 1210 1215

Asn Phe Asp Asn Val Gly Asn Ala Tyr Leu Ala Leu Leu Gln Val
 1220 1225 1230

Ala Thr Tyr Lys Gly Trp Leu Glu Ile Met Asn Ala Ala Val Asp
 1235 1240 1245

Ser Arg Glu Lys Asp Glu Gln Pro Asp Phe Glu Ala Asn Leu Tyr
 1250 1255 1260

Ala Tyr Leu Tyr Phe Val Val Phe Ile Ile Phe Gly Ser Phe Phe
 1265 1270 1275

Thr Leu Asn Leu Phe Ile Gly Val Ile Ile Asp Asn Phe Asn Gln
 1280 1285 1290

Gln Gln Lys Lys Leu Gly Gly Gln Asp Ile Phe Met Thr Glu Glu
 1295 1300 1305

Gln Lys Lys Tyr Tyr Asn Ala Met Lys Lys Leu Gly Thr Lys Lys
 1310 1315 1320

Pro Gln Lys Pro Ile Pro Arg Pro Leu Asn Lys Cys Gln Ala Phe
 1325 1330 1335

| | | | | | | | | | | | | | | |
|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Val | Phe | Asp | Leu | Val | Thr | Ser | Gln | Val | Phe | Asp | Val | Ile | Ile | Leu |
| 1340 | | | | | | 1345 | | | | | 1350 | | | |
| Gly | Leu | Ile | Val | Leu | Asn | Met | Ile | Ile | Met | Met | Ala | Glu | Ser | Ala |
| 1355 | | | | | | 1360 | | | | | 1365 | | | |
| Asp | Gln | Pro | Lys | Asp | Val | Lys | Lys | Thr | Phe | Asp | Ile | Leu | Asn | Ile |
| 1370 | | | | | | 1375 | | | | | 1380 | | | |
| Ala | Phe | Val | Val | Ile | Phe | Thr | Ile | Glu | Cys | Leu | Ile | Lys | Val | Phe |
| 1385 | | | | | | 1390 | | | | | 1395 | | | |
| Ala | Leu | Arg | Gln | His | Tyr | Phe | Thr | Asn | Gly | Trp | Asn | Leu | Phe | Asp |
| 1400 | | | | | | 1405 | | | | | 1410 | | | |
| Cys | Val | Val | Val | Val | Leu | Ser | Ile | Ile | Ser | Thr | Leu | Val | Ser | Arg |
| 1415 | | | | | | 1420 | | | | | 1425 | | | |
| Leu | Glu | Asp | Ser | Asp | Ile | Ser | Phe | Pro | Pro | Thr | Leu | Phe | Arg | Val |
| 1430 | | | | | | 1435 | | | | | 1440 | | | |
| Val | Arg | Leu | Ala | Arg | Ile | Gly | Arg | Ile | Leu | Arg | Leu | Val | Arg | Ala |
| 1445 | | | | | | 1450 | | | | | 1455 | | | |
| Ala | Arg | Gly | Ile | Arg | Thr | Leu | Leu | Phe | Ala | Leu | Met | Met | Ser | Leu |
| 1460 | | | | | | 1465 | | | | | 1470 | | | |
| Pro | Ser | Leu | Phe | Asn | Ile | Gly | Leu | Leu | Leu | Phe | Leu | Val | Met | Phe |
| 1475 | | | | | | 1480 | | | | | 1485 | | | |
| Ile | Tyr | Ala | Ile | Phe | Gly | Met | Ser | Trp | Phe | Ser | Lys | Val | Lys | Lys |
| 1490 | | | | | | 1495 | | | | | 1500 | | | |
| Gly | Ser | Gly | Ile | Asp | Asp | Ile | Phe | Asn | Phe | Glu | Thr | Phe | Thr | Gly |
| 1505 | | | | | | 1510 | | | | | 1515 | | | |
| Ser | Met | Leu | Cys | Leu | Phe | Gln | Ile | Thr | Thr | Ser | Ala | Gly | Trp | Asp |
| 1520 | | | | | | 1525 | | | | | 1530 | | | |
| Thr | Leu | Leu | Asn | Pro | Met | Leu | Glu | Ala | Lys | Glu | His | Cys | Asn | Ser |
| 1535 | | | | | | 1540 | | | | | 1545 | | | |
| Ser | Ser | Gln | Asp | Ser | Cys | Gln | Gln | Pro | Gln | Ile | Ala | Val | Val | Tyr |
| 1550 | | | | | | 1555 | | | | | 1560 | | | |

| | | | |
|---------|---------------------|---------------------|-------------|
| Phe Val | Ser Tyr Ile Ile Ile | Ser Phe Leu Ile Val | Val Asn Met |
| 1565 | | 1570 | 1575 |
| | | | |
| Tyr Ile | Ala Val Ile Leu Glu | Asn Phe Asn Thr Ala | Thr Glu Glu |
| 1580 | | 1585 | 1590 |
| | | | |
| Ser Glu | Asp Pro Leu Gly Glu | Asp Asp Phe Glu Ile | Phe Tyr Glu |
| 1595 | | 1600 | 1605 |
| | | | |
| Val Trp | Glu Lys Phe Asp Pro | Glu Ala Ser Gln Phe | Ile Gln Tyr |
| 1610 | | 1615 | 1620 |
| | | | |
| Ser Ala | Leu Ser Asp Phe Ala | Asp Ala Leu Pro Glu | Pro Leu Arg |
| 1625 | | 1630 | 1635 |
| | | | |
| Val Ala | Lys Pro Asn Lys Phe | Gln Phe Leu Val Met | Asp Leu Pro |
| 1640 | | 1645 | 1650 |
| | | | |
| Met Val | Met Gly Asp Arg Leu | His Cys Met Asp Val | Leu Phe Ala |
| 1655 | | 1660 | 1665 |
| | | | |
| Phe Thr | Thr Arg Val Leu Gly | Asp Ser Ser Gly Leu | Asp Thr Met |
| 1670 | | 1675 | 1680 |
| | | | |
| Lys Thr | Met Met Glu Glu Lys | Phe Met Glu Ala Asn | Pro Phe Lys |
| 1685 | | 1690 | 1695 |
| | | | |
| Lys Leu | Tyr Glu Pro Ile Val | Thr Thr Thr Lys Arg | Lys Glu Glu |
| 1700 | | 1705 | 1710 |
| | | | |
| Glu Gln | Gly Ala Ala Val Ile | Gln Arg Ala Tyr Arg | Lys His Met |
| 1715 | | 1720 | 1725 |
| | | | |
| Glu Lys | Met Val Lys Leu Arg | Leu Lys Asp Arg Ser | Ser Ser Ser |
| 1730 | | 1735 | 1740 |
| | | | |
| His Gln | Val Phe Cys Asn Gly | Asp Leu Ser Ser Leu | Asp Val Ala |
| 1745 | | 1750 | 1755 |
| | | | |
| Lys Val | Lys Val His Asn Asp | | |
| 1760 | | 1765 | |

<210> 3
 <211> 5860
 <212> DNA
 <213> Homo sapiens

<220>

<221> CDS

<222> (31) .. (5403)

<223>

<400> 3

```

atctgctcaa gccaggaatc tcgggtgaag atg gat gac aga tgc tac cca gta      54
                               Met Asp Asp Arg Cys Tyr Pro Val
                               1                               5

atc ttt cca gat gag cgg aat ttc cgc ccc ttc act tcc gac tct ctg      102
Ile Phe Pro Asp Glu Arg Asn Phe Arg Pro Phe Thr Ser Asp Ser Leu
   10                               15                               20

gct gca att gag aag cgg att gcc atc caa aag gag aaa aag aag tct      150
Ala Ala Ile Glu Lys Arg Ile Ala Ile Gln Lys Glu Lys Lys Lys Ser
  25                               30                               35                               40

aaa gac cag aca gga gaa gta ccc cag cct cgg cct cag ctt gac cta      198
Lys Asp Gln Thr Gly Glu Val Pro Gln Pro Arg Pro Gln Leu Asp Leu
                               45                               50                               55

aag gcc tcc agg aag ttg ccc aag ctc tat ggc gac att cct cgt gag      246
Lys Ala Ser Arg Lys Leu Pro Lys Leu Tyr Gly Asp Ile Pro Arg Glu
                               60                               65                               70

ctc ata gga aag cct ctg gaa gac ttg gac cca ttc tac cga aat cat      294
Leu Ile Gly Lys Pro Leu Glu Asp Leu Asp Pro Phe Tyr Arg Asn His
   75                               80                               85

aag aca ttt atg gtg tta aac aga aag agg aca atc tac cgc ttc agt      342
Lys Thr Phe Met Val Leu Asn Arg Lys Arg Thr Ile Tyr Arg Phe Ser
   90                               95                               100

gcc aag cat gcc ttg ttc att ttt ggg cct ttc aat tca atc aga agt      390
Ala Lys His Ala Leu Phe Ile Phe Gly Pro Phe Asn Ser Ile Arg Ser
 105                               110                               115                               120

tta gcc att aga gtc tca gtc cat tca ttg ttc agc atg ttc att atc      438
Leu Ala Ile Arg Val Ser Val His Ser Leu Phe Ser Met Phe Ile Ile
   125                               130                               135

ggc acc gtt atc atc aac tgc gtg ttc atg gct aca ggg cct gct aaa      486
Gly Thr Val Ile Ile Asn Cys Val Phe Met Ala Thr Gly Pro Ala Lys
 140                               145                               150

aac agc aac agt aac aat act gac att gca gag tgt gtc ttc act ggg      534
Asn Ser Asn Ser Asn Asn Thr Asp Ile Ala Glu Cys Val Phe Thr Gly
 155                               160                               165

att tat att ttt gaa gct ttg att aaa ata ttg gca aga ggt ttc att      582
Ile Tyr Ile Phe Glu Ala Leu Ile Lys Ile Leu Ala Arg Gly Phe Ile
 170                               175                               180
-----
ctg gat gag ttt tct ttc ctt cga gat cca tgg aac tgg ctg gac tcc      630
Leu Asp Glu Phe Ser Phe Leu Arg Asp Pro Trp Asn Trp Leu Asp Ser
 185                               190                               195                               200

att gtc att gga ata gcg att gtg tca tat att cca gga atc acc atc      678
Ile Val Ile Gly Ile Ala Ile Val Ser Tyr Ile Pro Gly Ile Thr Ile

```

| 205 | | | | | 210 | | | | | 215 | | | | | | |
|---|--|-----|-----|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| aaa cta ttg ccc ctg cgt acc ttc cgt gtg ttc aga gct ttg aaa gca | | | | | | | | | | | | | | | | 726 |
| Lys Leu Leu Pro Leu Arg Thr Phe Arg Val Phe Arg Ala Leu Lys Ala | | | | | | | | | | | | | | | | |
| | | | 220 | | | | | 225 | | | | 230 | | | | |
| att tca gta gtt tca cgt ctg aag gtc atc gtg ggg gcc ttg cta cgc | | | | | | | | | | | | | | | | 774 |
| Ile Ser Val Val Ser Arg Leu Lys Val Ile Val Gly Ala Leu Leu Arg | | | | | | | | | | | | | | | | |
| | | 235 | | | | | 240 | | | | 245 | | | | | |
| tct gtg aag aag ctg gtc aac gtg att atc ctc acc ttc ttt tgc ctc | | | | | | | | | | | | | | | | 822 |
| Ser Val Lys Lys Leu Val Asn Val Ile Ile Leu Thr Phe Phe Cys Leu | | | | | | | | | | | | | | | | |
| | | 250 | | | | 255 | | | | 260 | | | | | | |
| agc atc ttt gcc ctg gta ggt cag cag ctc ttc atg gga agt ctg aac | | | | | | | | | | | | | | | | 870 |
| Ser Ile Phe Ala Leu Val Gly Gln Gln Leu Phe Met Gly Ser Leu Asn | | | | | | | | | | | | | | | | |
| | | 265 | | | 270 | | | | 275 | | | | | | 280 | |
| ctg aaa tgc atc tcg agg gac tgt aaa aat atc agt aac ccg gaa gct | | | | | | | | | | | | | | | | 918 |
| Leu Lys Cys Ile Ser Arg Asp Cys Lys Asn Ile Ser Asn Pro Glu Ala | | | | | | | | | | | | | | | | |
| | | | 285 | | | | 290 | | | | | | 295 | | | |
| tat gac cat tgc ttt gaa aag aaa gaa aat tca cct gaa ttc aaa atg | | | | | | | | | | | | | | | | 966 |
| Tyr Asp His Cys Phe Glu Lys Lys Glu Asn Ser Pro Glu Phe Lys Met | | | | | | | | | | | | | | | | |
| | | 300 | | | | 305 | | | | | | 310 | | | | |
| tgt ggc atc tgg atg ggt aac agt gcc tgt tcc ata caa tat gaa tgt | | | | | | | | | | | | | | | | 1014 |
| Cys Gly Ile Trp Met Gly Asn Ser Ala Cys Ser Ile Gln Tyr Glu Cys | | | | | | | | | | | | | | | | |
| | | 315 | | | | 320 | | | | | 325 | | | | | |
| aag cac acc aaa att aat cct gac tat aat tat acg aat ttt gac aac | | | | | | | | | | | | | | | | 1062 |
| Lys His Thr Lys Ile Asn Pro Asp Tyr Asn Tyr Thr Asn Phe Asp Asn | | | | | | | | | | | | | | | | |
| | | 330 | | | | 335 | | | | 340 | | | | | | |
| ttt ggc tgg tct ttt ctt gcc atg ttc cgg ctg atg acc caa gat tcc | | | | | | | | | | | | | | | | 1110 |
| Phe Gly Trp Ser Phe Leu Ala Met Phe Arg Leu Met Thr Gln Asp Ser | | | | | | | | | | | | | | | | |
| | | 345 | | | 350 | | | | 355 | | | | | | 360 | |
| tgg gag aag ctt tat caa cag acc ctg cgt act act ggg ctc tac tca | | | | | | | | | | | | | | | | 1158 |
| Trp Glu Lys Leu Tyr Gln Gln Thr Leu Arg Thr Thr Gly Leu Tyr Ser | | | | | | | | | | | | | | | | |
| | | | 365 | | | | 370 | | | | | | 375 | | | |
| gtc ttc ttc ttc att gtg gtc att ttc ctg ggc tcc ttc tac ctg att | | | | | | | | | | | | | | | | 1206 |
| Val Phe Phe Phe Ile Val Val Ile Phe Leu Gly Ser Phe Tyr Leu Ile | | | | | | | | | | | | | | | | |
| | | | 380 | | | | 385 | | | | | | 390 | | | |
| aac tta acc ctg gct gtt gtt acc atg gca tat gag gag cag aac aag | | | | | | | | | | | | | | | | 1254 |
| Asn Leu Thr Leu Ala Val Val Thr Met Ala Tyr Glu Glu Gln Asn Lys | | | | | | | | | | | | | | | | |
| | | 395 | | | | 400 | | | | | 405 | | | | | |
| aat gta gct gca gag ata gag gcc aag gaa aag atg ttt cag gaa gcc | | | | | | | | | | | | | | | | 1302 |
| Asn Val Ala Ala Glu Ile Glu Ala Lys Glu Lys Met Phe Gln Glu Ala | | | | | | | | | | | | | | | | |
| | | 410 | | | | 415 | | | | 420 | | | | | | |
| cag cag ctg tta aag gag gaa aag gag gct ctg gtt gcc atg gga att | | | | | | | | | | | | | | | | 1350 |
| Gln Gln Leu Leu Lys Glu Glu Lys Glu Ala Leu Val Ala Met Gly Ile | | | | | | | | | | | | | | | | |
| | | 425 | | | | 430 | | | | 435 | | | | 440 | | |
| gac aga agt tca ctt act tcc ctt gaa aca tca tat ttt acc cca aaa | | | | | | | | | | | | | | | | 1398 |
| Asp Arg Ser Ser Leu Thr Ser Leu Glu Thr Ser Tyr Phe Thr Pro Lys | | | | | | | | | | | | | | | | |
| | | | 445 | | | | 450 | | | | | | 455 | | | |

| | |
|---|------|
| aag aga aag ctc ttt ggt aat aag aaa agg aag tcc ttc ttt ttg aga | 1446 |
| Lys Arg Lys Leu Phe Gly Asn Lys Lys Arg Lys Ser Phe Phe Leu Arg | |
| 460 465 470 | |
| gag tct ggg aaa gac cag cct cct ggg tca gat tct gat gaa gat tgc | 1494 |
| Glu Ser Gly Lys Asp Gln Pro Pro Gly Ser Asp Ser Asp Glu Asp Cys | |
| 475 480 485 | |
| caa aaa aag cca cag ctc cta gag caa acc aaa cga ctg tcc cag aat | 1542 |
| Gln Lys Lys Pro Gln Leu Leu Glu Gln Thr Lys Arg Leu Ser Gln Asn | |
| 490 495 500 | |
| cta tca ctg gac cac ttt gat gag cat gga gat cct ctc caa agg cag | 1590 |
| Leu Ser Leu Asp His Phe Asp Glu His Gly Asp Pro Leu Gln Arg Gln | |
| 505 510 515 520 | |
| aga gca ctg agt gct gtc agc atc ctc acc atc acc atg aag gaa caa | 1638 |
| Arg Ala Leu Ser Ala Val Ser Ile Leu Thr Ile Thr Met Lys Glu Gln | |
| 525 530 535 | |
| gaa aaa tca caa gag cct tgt ctc cct tgt gga gaa aac ctg gca tcc | 1686 |
| Glu Lys Ser Gln Glu Pro Cys Leu Pro Cys Gly Glu Asn Leu Ala Ser | |
| 540 545 550 | |
| aag tac ctc gtg tgg aac tgt tgc ccc cag tgg ctg tgc gtt aag aag | 1734 |
| Lys Tyr Leu Val Trp Asn Cys Cys Pro Gln Trp Leu Cys Val Lys Lys | |
| 555 560 565 | |
| gtc ctg aga act gtg atg act gac ccg ttt act gag ctg gcc atc acc | 1782 |
| Val Leu Arg Thr Val Met Thr Asp Pro Phe Thr Glu Leu Ala Ile Thr | |
| 570 575 580 | |
| atc tgc atc atc atc aac act gtc ttc ttg gcc atg gag cat cac aag | 1830 |
| Ile Cys Ile Ile Ile Asn Thr Val Phe Leu Ala Met Glu His His Lys | |
| 585 590 595 600 | |
| atg gag gcc agt ttt gag aag atg ttg aat ata ggg aat ttg gtt ttc | 1878 |
| Met Glu Ala Ser Phe Glu Lys Met Leu Asn Ile Gly Asn Leu Val Phe | |
| 605 610 615 | |
| act agc att ttt ata gca gaa atg tgc cta aaa atc att gcg ctc gat | 1926 |
| Thr Ser Ile Phe Ile Ala Glu Met Cys Leu Lys Ile Ile Ala Leu Asp | |
| 620 625 630 | |
| ccc tac cac tac ttt cgc cga ggc tgg aac att ttt gac agc att gtt | 1974 |
| Pro Tyr His Tyr Phe Arg Arg Gly Trp Asn Ile Phe Asp Ser Ile Val | |
| 635 640 645 | |
| gct ctt ctg agt ttt gca gat gta atg aac tgt gta ctt caa aag aga | 2022 |
| Ala Leu Leu Ser Phe Ala Asp Val Met Asn Cys Val Leu Gln Lys Arg | |
| 650 655 660 | |
| agc tgg cca ttc ttg cgt tcc ttc aga gtg ctc agg gtc ttc aag tta | 2070 |
| Ser Trp Pro Phe Leu Arg Ser Phe Arg Val Leu Arg Val Phe Lys Leu | |
| 665 670 675 680 | |
| gcc aaa tcc tgg cca act ttg aac aca cta att aag ata atc ggc aac | 2118 |
| Ala Lys Ser Trp Pro Thr Leu Asn Thr Leu Ile Lys Ile Ile Gly Asn | |
| 685 690 695 | |

| | |
|---|------|
| tct gtc gga gcc ctt gga agc ctg act gtg gtc ctg gtc att gtg atc | 2166 |
| Ser Val Gly Ala Leu Gly Ser Leu Thr Val Val Leu Val Ile Val Ile | |
| 700 705 710 | |
| ttt att ttc tca gta gtt ggc atg cag ctt ttt ggc cgt agc ttc aat | 2214 |
| Phe Ile Phe Ser Val Val Gly Met Gln Leu Phe Gly Arg Ser Phe Asn | |
| 715 720 725 | |
| tcc caa aag agt cca aaa ctc tgt aac ccg aca ggc ccg aca gtc tca | 2262 |
| Ser Gln Lys Ser Pro Lys Leu Cys Asn Pro Thr Gly Pro Thr Val Ser | |
| 730 735 740 | |
| tgt tta cgg cac tgg cac atg ggg gat ttc tgg cac tcc ttc cta gtg | 2310 |
| Cys Leu Arg His Trp His Met Gly Asp Phe Trp His Ser Phe Leu Val | |
| 745 750 755 760 | |
| gta ttc cgc atc ctc tgc ggg gaa tgg atc gaa aat atg tgg gaa tgt | 2358 |
| Val Phe Arg Ile Leu Cys Gly Glu Trp Ile Glu Asn Met Trp Glu Cys | |
| 765 770 775 | |
| atg caa gaa gcg aat gca tca tca tca ttg tgt gtt att gtc ttc ata | 2406 |
| Met Gln Glu Ala Asn Ala Ser Ser Ser Leu Cys Val Ile Val Phe Ile | |
| 780 785 790 | |
| ttg atc acg gtg ata gga aaa ctt gtg gtg ctc aac ctc ttc att gcc | 2454 |
| Leu Ile Thr Val Ile Gly Lys Leu Val Val Leu Asn Leu Phe Ile Ala | |
| 795 800 805 | |
| tta ctg ctc aat tcc ttt agc aat gag gaa aga aat gga aac tta gaa | 2502 |
| Leu Leu Leu Asn Ser Phe Ser Asn Glu Glu Arg Asn Gly Asn Leu Glu | |
| 810 815 820 | |
| gga gag gcc agg aaa act aaa gtc cag tta gca ctg gat cga ttc cgc | 2550 |
| Gly Glu Ala Arg Lys Thr Lys Val Gln Leu Ala Leu Asp Arg Phe Arg | |
| 825 830 835 840 | |
| cgg gct ttt tgt ttt gtg aga cac act ctt gag cat ttc tgt cac aag | 2598 |
| Arg Ala Phe Cys Phe Val Arg His Thr Leu Glu His Phe Cys His Lys | |
| 845 850 855 | |
| tgg tgc agg aag caa aac tta cca cag caa aaa gag gtg gca gga ggc | 2646 |
| Trp Cys Arg Lys Gln Asn Leu Pro Gln Gln Lys Glu Val Ala Gly Gly | |
| 860 865 870 | |
| tgt gct gca caa agc aaa gac atc att ccc ctg gtc atg gag atg aaa | 2694 |
| Cys Ala Ala Gln Ser Lys Asp Ile Ile Pro Leu Val Met Glu Met Lys | |
| 875 880 885 | |
| agg ggc tca gag acc cag gag gag ctt ggt ata cta acc tct gta cca | 2742 |
| Arg Gly Ser Glu Thr Gln Glu Glu Leu Gly Ile Leu Thr Ser Val Pro | |
| 890 895 900 | |
| aag acc ctg ggc gtc agg cat gat tgg act tgg ttg gca cca ctt gcg | 2790 |
| Lys Thr Leu Gly Val Arg His Asp Trp Thr Trp Leu Ala Pro Leu Ala | |
| 905 910 915 920 | |
| gag gag gaa gat gac gtt gaa ttt tct ggt gaa gat aat gca cag cgc | 2838 |
| Glu Glu Glu Asp Asp Val Glu Phe Ser Gly Glu Asp Asn Ala Gln Arg | |
| 925 930 935 | |
| atc aca caa cct gag cct gaa caa cag gcc tat gag ctc cat cag gag | 2886 |

| | |
|---|------|
| Ile Thr Gln Pro Glu Pro Glu Gln Gln Ala Tyr Glu Leu His Gln Glu | |
| 940 945 950 | |
| aac aag aag ccc acg agc cag aga gtt caa agt gtg gaa att gac atg | 2934 |
| Asn Lys Lys Pro Thr Ser Gln Arg Val Gln Ser Val Glu Ile Asp Met | |
| 955 960 965 | |
| ttc tct gaa gat gag cct cat ctg acc ata cag gat ccc cga aag aag | 2982 |
| Phe Ser Glu Asp Glu Pro His Leu Thr Ile Gln Asp Pro Arg Lys Lys | |
| 970 975 980 | |
| tct gat gtt acc agt ata cta tca gaa tgt agc acc att gat ctt cag | 3030 |
| Ser Asp Val Thr Ser Ile Leu Ser Glu Cys Ser Thr Ile Asp Leu Gln | |
| 985 990 995 1000 | |
| gat ggc ttt gga tgg tta cct gag atg gtt ccc aaa aag caa cca | 3075 |
| Asp Gly Phe Gly Trp Leu Pro Glu Met Val Pro Lys Lys Gln Pro | |
| 1005 1010 1015 | |
| gag aga tgt ttg ccc aaa ggc ttt ggt tgc tgc ttt cca tgc tgt | 3120 |
| Glu Arg Cys Leu Pro Lys Gly Phe Gly Cys Cys Phe Pro Cys Cys | |
| 1020 1025 1030 | |
| agc gtg gac aag aga aag cct ccc tgg gtc att tgg tgg aac ctg | 3165 |
| Ser Val Asp Lys Arg Lys Pro Pro Trp Val Ile Trp Trp Asn Leu | |
| 1035 1040 1045 | |
| cgg aaa acc tgc tac caa ata gtg aaa cac agc tgg ttt gag agc | 3210 |
| Arg Lys Thr Cys Tyr Gln Ile Val Lys His Ser Trp Phe Glu Ser | |
| 1050 1055 1060 | |
| ttt att atc ttt gtg att ctg ctg agc agt ggg gca ctg ata ttt | 3255 |
| Phe Ile Ile Phe Val Ile Leu Leu Ser Ser Gly Ala Leu Ile Phe | |
| 1065 1070 1075 | |
| gaa gat gtt cac ctt gag aac caa ccc aaa atc caa gaa tta cta | 3300 |
| Glu Asp Val His Leu Glu Asn Gln Pro Lys Ile Gln Glu Leu Leu | |
| 1080 1085 1090 | |
| aat tgt act gac att att ttt aca cat att ttt atc ctg gag atg | 3345 |
| Asn Cys Thr Asp Ile Ile Phe Thr His Ile Phe Ile Leu Glu Met | |
| 1095 1100 1105 | |
| gta cta aaa tgg gta gcc ttc gga ttt gga aag tat ttc acc agt | 3390 |
| Val Leu Lys Trp Val Ala Phe Gly Phe Gly Lys Tyr Phe Thr Ser | |
| 1110 1115 1120 | |
| gcc tgg tgc tgc ctt gat ttc atc att gtg att gtc tct gtg acc | 3435 |
| Ala Trp Cys Cys Leu Asp Phe Ile Ile Val Ile Val Ser Val Thr | |
| 1125 1130 1135 | |
| acc ctc att aac tta atg gaa ttg aag tcc ttc cgg act cta cga | 3480 |
| Thr Leu Ile Asn Leu Met Glu Leu Lys Ser Phe Arg Thr Leu Arg | |
| 1140 1145 1150 | |
| gca ctg agg cct ctt cgt gcg ctg tcc cag ttt gaa gga atg aag | 3525 |
| Ala Leu Arg Pro Leu Arg Ala Leu Ser Gln Phe Glu Gly Met Lys | |
| 1155 1160 1165 | |
| gtg gtg gtc aat gct ctc ata ggt gcc ata cct gcc att ctg aat | 3570 |
| Val Val Val Asn Ala Leu Ile Gly Ala Ile Pro Ala Ile Leu Asn | |

| 1170 | | | | | 1175 | | | | | 1180 | | | | | |
|------|-----|-----|-----|------|------|-----|-----|-----|------|------|-----|-----|-----|------|------|
| gtt | ttg | ctt | gtc | tgc | ctc | att | ttc | tgg | ctc | gta | ttt | tgt | att | ctg | 3615 |
| Val | Leu | Leu | Val | Cys | Leu | Ile | Phe | Trp | Leu | Val | Phe | Cys | Ile | Leu | |
| | | | | 1185 | | | | | 1190 | | | | | 1195 | |
| gga | gta | tac | ttc | ttt | tct | gga | aaa | ttt | ggg | aaa | tgc | att | aat | gga | 3660 |
| Gly | Val | Tyr | Phe | Phe | Ser | Gly | Lys | Phe | Gly | Lys | Cys | Ile | Asn | Gly | |
| | | | | 1200 | | | | | 1205 | | | | | 1210 | |
| aca | gac | tca | gtt | ata | aat | tat | acc | atc | att | aca | aat | aaa | agt | caa | 3705 |
| Thr | Asp | Ser | Val | Ile | Asn | Tyr | Thr | Ile | Ile | Thr | Asn | Lys | Ser | Gln | |
| | | | | 1215 | | | | | 1220 | | | | | 1225 | |
| tgt | gaa | agt | ggc | aat | ttc | tct | tgg | atc | aac | cag | aaa | gtc | aac | ttt | 3750 |
| Cys | Glu | Ser | Gly | Asn | Phe | Ser | Trp | Ile | Asn | Gln | Lys | Val | Asn | Phe | |
| | | | | 1230 | | | | | 1235 | | | | | 1240 | |
| gac | aat | gtg | gga | aat | gct | tac | ctc | gct | ctg | ctg | caa | gtg | gca | aca | 3795 |
| Asp | Asn | Val | Gly | Asn | Ala | Tyr | Leu | Ala | Leu | Leu | Gln | Val | Ala | Thr | |
| | | | | 1245 | | | | | 1250 | | | | | 1255 | |
| ttt | aag | ggc | tgg | atg | gat | att | ata | tat | gca | gct | gtt | gat | tcc | aca | 3840 |
| Phe | Lys | Gly | Trp | Met | Asp | Ile | Ile | Tyr | Ala | Ala | Val | Asp | Ser | Thr | |
| | | | | 1260 | | | | | 1265 | | | | | 1270 | |
| gag | aaa | gaa | caa | cag | cca | gag | ttt | gag | agc | aat | tca | ctc | ggt | tac | 3885 |
| Glu | Lys | Glu | Gln | Gln | Pro | Glu | Phe | Glu | Ser | Asn | Ser | Leu | Gly | Tyr | |
| | | | | 1275 | | | | | 1280 | | | | | 1285 | |
| att | tac | ttc | gta | gtc | ttt | atc | atc | ttt | ggc | tca | ttc | ttc | act | ctg | 3930 |
| Ile | Tyr | Phe | Val | Val | Phe | Ile | Ile | Phe | Gly | Ser | Phe | Phe | Thr | Leu | |
| | | | | 1290 | | | | | 1295 | | | | | 1300 | |
| aat | ctc | ttc | att | ggc | gtt | atc | att | gac | aac | ttc | aac | caa | cag | cag | 3975 |
| Asn | Leu | Phe | Ile | Gly | Val | Ile | Ile | Asp | Asn | Phe | Asn | Gln | Gln | Gln | |
| | | | | 1305 | | | | | 1310 | | | | | 1315 | |
| aaa | aag | tta | ggt | ggc | caa | gac | att | ttt | atg | aca | gaa | gaa | cag | aag | 4020 |
| Lys | Lys | Leu | Gly | Gly | Gln | Asp | Ile | Phe | Met | Thr | Glu | Glu | Gln | Lys | |
| | | | | 1320 | | | | | 1325 | | | | | 1330 | |
| aaa | tac | tat | aat | gca | atg | aaa | aaa | tta | gga | tcc | aaa | aaa | cct | caa | 4065 |
| Lys | Tyr | Tyr | Asn | Ala | Met | Lys | Lys | Leu | Gly | Ser | Lys | Lys | Pro | Gln | |
| | | | | 1335 | | | | | 1340 | | | | | 1345 | |
| aaa | ccc | att | cca | cgg | cct | ctg | aac | aaa | tgt | caa | ggt | ctc | gtg | ttc | 4110 |
| Lys | Pro | Ile | Pro | Arg | Pro | Leu | Asn | Lys | Cys | Gln | Gly | Leu | Val | Phe | |
| | | | | 1350 | | | | | 1355 | | | | | 1360 | |
| gac | ata | gtc | aca | agc | cag | atc | ttt | gac | atc | atc | atc | ata | agt | ctc | 4155 |
| Asp | Ile | Val | Thr | Ser | Gln | Ile | Phe | Asp | Ile | Ile | Ile | Ile | Ser | Leu | |
| | | | | 1365 | | | | | 1370 | | | | | 1375 | |
| att | atc | cta | aac | atg | att | agc | atg | atg | gct | gaa | tca | tac | aac | caa | 4200 |
| Ile | Ile | Leu | Asn | Met | Ile | Ser | Met | Met | Ala | Glu | Ser | Tyr | Asn | Gln | |
| | | | | 1380 | | | | | 1385 | | | | | 1390 | |
| ccc | aaa | gcc | atg | aaa | tcc | atc | ctt | gac | cat | ctc | aac | tgg | gtc | ttt | 4245 |
| Pro | Lys | Ala | Met | Lys | Ser | Ile | Leu | Asp | His | Leu | Asn | Trp | Val | Phe | |
| | | | | 1395 | | | | | 1400 | | | | | 1405 | |

| | |
|---|------|
| gtg gtc atc ttt acg tta gaa tgt ctc atc aaa atc ttt gct ttg | 4290 |
| Val Val Ile Phe Thr Leu Glu Cys Leu Ile Lys Ile Phe Ala Leu | |
| 1410 1415 1420 | |
| agg caa tac tac ttc acc aat ggc tgg aat tta ttt gac tgt gtg | 4335 |
| Arg Gln Tyr Tyr Phe Thr Asn Gly Trp Asn Leu Phe Asp Cys Val | |
| 1425 1430 1435 | |
| gtc gtg ctt ctt tcc att gtt agt aca atg att tct acc ttg gaa | 4380 |
| Val Val Leu Leu Ser Ile Val Ser Thr Met Ile Ser Thr Leu Glu | |
| 1440 1445 1450 | |
| aat cag gag cac att cct ttc cct ccg acg ctc ttc aga att gtc | 4425 |
| Asn Gln Glu His Ile Pro Phe Pro Pro Thr Leu Phe Arg Ile Val | |
| 1455 1460 1465 | |
| cgc ttg gct cgg att ggc cga atc ctg agg ctt gtc cgg gct gca | 4470 |
| Arg Leu Ala Arg Ile Gly Arg Ile Leu Arg Leu Val Arg Ala Ala | |
| 1470 1475 1480 | |
| cga gga atc agg act ctc ctc ttt gct ctg atg atg tcg ctt cct | 4515 |
| Arg Gly Ile Arg Thr Leu Leu Phe Ala Leu Met Met Ser Leu Pro | |
| 1485 1490 1495 | |
| tct ctg ttc aac att ggt ctt cta ctc ttt ctg att atg ttt atc | 4560 |
| Ser Leu Phe Asn Ile Gly Leu Leu Leu Phe Leu Ile Met Phe Ile | |
| 1500 1505 1510 | |
| tat gcc att ctg ggt atg aac tgg ttt tcc aaa gtg aat cca gag | 4605 |
| Tyr Ala Ile Leu Gly Met Asn Trp Phe Ser Lys Val Asn Pro Glu | |
| 1515 1520 1525 | |
| tct gga atc gat gac ata ttc aac ttc aag act ttt gcc agc agc | 4650 |
| Ser Gly Ile Asp Asp Ile Phe Asn Phe Lys Thr Phe Ala Ser Ser | |
| 1530 1535 1540 | |
| atg ctc tgt ctc ttc cag ata agc aca tca gca ggt tgg gat tcc | 4695 |
| Met Leu Cys Leu Phe Gln Ile Ser Thr Ser Ala Gly Trp Asp Ser | |
| 1545 1550 1555 | |
| ctg ctc agc ccc atg ctg cga tca aaa gaa tca tgt aac tct tcc | 4740 |
| Leu Leu Ser Pro Met Leu Arg Ser Lys Glu Ser Cys Asn Ser Ser | |
| 1560 1565 1570 | |
| tca gaa aac tgc cac ctc cct ggc ata gcc aca tcc tac ttt gtc | 4785 |
| Ser Glu Asn Cys His Leu Pro Gly Ile Ala Thr Ser Tyr Phe Val | |
| 1575 1580 1585 | |
| agt tac att atc atc tcc ttt ctc att gtt gtc aac atg tac att | 4830 |
| Ser Tyr Ile Ile Ile Ser Phe Leu Ile Val Val Asn Met Tyr Ile | |
| 1590 1595 1600 | |
| gct gtg att tta gag aac ttc aat aca gcc act gaa gaa agt gag | 4875 |
| Ala Val Ile Leu Glu Asn Phe Asn Thr Ala Thr Glu Glu Ser Glu | |
| 1605 1610 1615 | |
| gac cct ttg ggt gaa gat gac ttt gac ata ttt tat gaa gtg tgg | 4920 |
| Asp Pro Leu Gly Glu Asp Asp Phe Asp Ile Phe Tyr Glu Val Trp | |
| 1620 1625 1630 | |

| | |
|--|------|
| gaa aag ttt gac cca gaa gca aca caa ttt atc aaa tat tct gcc Glu Lys Phe Asp Pro Glu Ala Thr Gln Phe Ile Lys Tyr Ser Ala 1635 1640 1645 | 4965 |
| ctt tct gac ttt gct gat gcc ttg cct gag cct ttg cgt gtc gca Leu Ser Asp Phe Ala Asp Ala Leu Pro Glu Pro Leu Arg Val Ala 1650 1655 1660 | 5010 |
| aag cca aat aaa tat caa ttt cta gta atg gac ttg ccc atg gtg Lys Pro Asn Lys Tyr Gln Phe Leu Val Met Asp Leu Pro Met Val 1665 1670 1675 | 5055 |
| agt gaa gat cgc ctc cac tgc atg gat att ctt ttc gcc ttc acc Ser Glu Asp Arg Leu His Cys Met Asp Ile Leu Phe Ala Phe Thr 1680 1685 1690 | 5100 |
| gct agg gta ctc ggt ggc tct gat ggc cta gat agt atg aaa gca Ala Arg Val Leu Gly Gly Ser Asp Gly Leu Asp Ser Met Lys Ala 1695 1700 1705 | 5145 |
| atg atg gaa gag aag ttc atg gaa gcc aat cct ctc aag aag ttg Met Met Glu Glu Lys Phe Met Glu Ala Asn Pro Leu Lys Lys Leu 1710 1715 1720 | 5190 |
| tat gaa ccc ata gtc acc acc acc aag aga aag gaa gag gaa aga Tyr Glu Pro Ile Val Thr Thr Thr Lys Arg Lys Glu Glu Glu Arg 1725 1730 1735 | 5235 |
| ggt gct gct att att caa aag gcc ttt cga aag tac atg atg aag Gly Ala Ala Ile Ile Gln Lys Ala Phe Arg Lys Tyr Met Met Lys 1740 1745 1750 | 5280 |
| gtg acc aag ggt gac caa ggt gac caa aat gac ttg gaa aac ggg Val Thr Lys Gly Asp Gln Gly Asp Gln Asn Asp Leu Glu Asn Gly 1755 1760 1765 | 5325 |
| cct cat tca cca ctc cag act ctt tgc aat gga gac ttg tct agc Pro His Ser Pro Leu Gln Thr Leu Cys Asn Gly Asp Leu Ser Ser 1770 1775 1780 | 5370 |
| ttt ggg gtg gcc aag ggc aag gtc cac tgt gac tgagccctca Phe Gly Val Ala Lys Gly Lys Val His Cys Asp 1785 1790 | 5413 |
| cctccacgcc tacctcatag cttcacagcc ttgccttcag cctctgagct ccaggggtca | 5473 |
| gcagcttagt gtatcaacag ggagtggatt caccaaatta gccattccat tttcttttct | 5533 |
| ggctaaaata aatgatattt caatttcatt ttaaatagata cttacagaga tataagataa | 5593 |
| ggctacttga caaccagtgg tactattata ataaggaaga agacaccagg aaggactgta | 5653 |
| aaaggacata ccaatttttag gattgaaata gttcaggccg ggcgccagtgg ctcatgcctg | 5713 |
| taatcccagc acttttgagag gccaaaggcag gtggatcacg aggtcaagag atcgagacca | 5773 |
| tcctggccaa catgatgaaa ctccgtctct ctaaaaatac aaaaattagc tgggcatggt | 5833 |
| ggcgtgcgcc tgtagtccca ctacttg | 5860 |

<210> 4
 <211> 1791
 <212> PRT
 <213> Homo sapiens

<400> 4

Met Asp Asp Arg Cys Tyr Pro Val Ile Phe Pro Asp Glu Arg Asn Phe
 1 5 10 15

Arg Pro Phe Thr Ser Asp Ser Leu Ala Ala Ile Glu Lys Arg Ile Ala
 20 25 30

Ile Gln Lys Glu Lys Lys Lys Ser Lys Asp Gln Thr Gly Glu Val Pro
 35 40 45

Gln Pro Arg Pro Gln Leu Asp Leu Lys Ala Ser Arg Lys Leu Pro Lys
 50 55 60

Leu Tyr Gly Asp Ile Pro Arg Glu Leu Ile Gly Lys Pro Leu Glu Asp
 65 70 75 80

Leu Asp Pro Phe Tyr Arg Asn His Lys Thr Phe Met Val Leu Asn Arg
 85 90 95

Lys Arg Thr Ile Tyr Arg Phe Ser Ala Lys His Ala Leu Phe Ile Phe
 100 105 110

Gly Pro Phe Asn Ser Ile Arg Ser Leu Ala Ile Arg Val Ser Val His
 115 120 125

Ser Leu Phe Ser Met Phe Ile Ile Gly Thr Val Ile Ile Asn Cys Val
 130 135 140

Phe Met Ala Thr Gly Pro Ala Lys Asn Ser Asn Ser Asn Asn Thr Asp
 145 150 155 160

Ile Ala Glu Cys Val Phe Thr Gly Ile Tyr Ile Phe Glu Ala Leu Ile
 165 170 175

Lys Ile Leu Ala Arg Gly Phe Ile Leu Asp Glu Phe Ser Phe Leu Arg
 180 185 190

Asp Pro Trp Asn Trp Leu Asp Ser Ile Val Ile Gly Ile Ala Ile Val
 195 200 205

Ser Tyr Ile Pro Gly Ile Thr Ile Lys Leu Leu Pro Leu Arg Thr Phe
 210 215 220

Arg Val Phe Arg Ala Leu Lys Ala Ile Ser Val Val Ser Arg Leu Lys
225 230 235 240

Val Ile Val Gly Ala Leu Leu Arg Ser Val Lys Lys Leu Val Asn Val
245 250 255

Ile Ile Leu Thr Phe Phe Cys Leu Ser Ile Phe Ala Leu Val Gly Gln
260 265 270

Gln Leu Phe Met Gly Ser Leu Asn Leu Lys Cys Ile Ser Arg Asp Cys
275 280 285

Lys Asn Ile Ser Asn Pro Glu Ala Tyr Asp His Cys Phe Glu Lys Lys
290 295 300

Glu Asn Ser Pro Glu Phe Lys Met Cys Gly Ile Trp Met Gly Asn Ser
305 310 315 320

Ala Cys Ser Ile Gln Tyr Glu Cys Lys His Thr Lys Ile Asn Pro Asp
325 330 335

Tyr Asn Tyr Thr Asn Phe Asp Asn Phe Gly Trp Ser Phe Leu Ala Met
340 345 350

Phe Arg Leu Met Thr Gln Asp Ser Trp Glu Lys Leu Tyr Gln Gln Thr
355 360 365

Leu Arg Thr Thr Gly Leu Tyr Ser Val Phe Phe Phe Ile Val Val Ile
370 375 380

Phe Leu Gly Ser Phe Tyr Leu Ile Asn Leu Thr Leu Ala Val Val Thr
385 390 395 400

Met Ala Tyr Glu Glu Gln Asn Lys Asn Val Ala Ala Glu Ile Glu Ala
405 410 415

Lys Glu Lys Met Phe Gln Glu Ala Gln Gln Leu Leu Lys Glu Glu Lys
420 425 430

-----Glu Ala Leu Val Ala Met Gly Ile Asp Arg Ser Ser Leu Thr Ser Leu
435 440 445

Glu Thr Ser Tyr Phe Thr Pro Lys Lys Arg Lys Leu Phe Gly Asn Lys
450 455 460

Lys Arg Lys Ser Phe Phe Leu Arg Glu Ser Gly Lys Asp Gln Pro Pro
 465 470 475 480

Gly Ser Asp Ser Asp Glu Asp Cys Gln Lys Lys Pro Gln Leu Leu Glu
 485 490 495

Gln Thr Lys Arg Leu Ser Gln Asn Leu Ser Leu Asp His Phe Asp Glu
 500 505 510

His Gly Asp Pro Leu Gln Arg Gln Arg Ala Leu Ser Ala Val Ser Ile
 515 520 525

Leu Thr Ile Thr Met Lys Glu Gln Glu Lys Ser Gln Glu Pro Cys Leu
 530 535 540

Pro Cys Gly Glu Asn Leu Ala Ser Lys Tyr Leu Val Trp Asn Cys Cys
 545 550 555 560

Pro Gln Trp Leu Cys Val Lys Lys Val Leu Arg Thr Val Met Thr Asp
 565 570 575

Pro Phe Thr Glu Leu Ala Ile Thr Ile Cys Ile Ile Ile Asn Thr Val
 580 585 590

Phe Leu Ala Met Glu His His Lys Met Glu Ala Ser Phe Glu Lys Met
 595 600 605

Leu Asn Ile Gly Asn Leu Val Phe Thr Ser Ile Phe Ile Ala Glu Met
 610 615 620

Cys Leu Lys Ile Ile Ala Leu Asp Pro Tyr His Tyr Phe Arg Arg Gly
 625 630 635 640

Trp Asn Ile Phe Asp Ser Ile Val Ala Leu Leu Ser Phe Ala Asp Val
 645 650 655

Met Asn Cys Val Leu Gln Lys Arg Ser Trp Pro Phe Leu Arg Ser Phe
 660 665 670

Arg Val Leu Arg Val Phe Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn
 675 680 685

Thr Leu Ile Lys Ile Ile Gly Asn Ser Val Gly Ala Leu Gly Ser Leu
 690 695 700

Thr Val Val Leu Val Ile Val Ile Phe Ile Phe Ser Val Val Gly Met
705 710 715 720

Gln Leu Phe Gly Arg Ser Phe Asn Ser Gln Lys Ser Pro Lys Leu Cys
725 730 735

Asn Pro Thr Gly Pro Thr Val Ser Cys Leu Arg His Trp His Met Gly
740 745 750

Asp Phe Trp His Ser Phe Leu Val Val Phe Arg Ile Leu Cys Gly Glu
755 760 765

Trp Ile Glu Asn Met Trp Glu Cys Met Gln Glu Ala Asn Ala Ser Ser
770 775 780

Ser Leu Cys Val Ile Val Phe Ile Leu Ile Thr Val Ile Gly Lys Leu
785 790 795 800

Val Val Leu Asn Leu Phe Ile Ala Leu Leu Leu Asn Ser Phe Ser Asn
805 810 815

Glu Glu Arg Asn Gly Asn Leu Glu Gly Glu Ala Arg Lys Thr Lys Val
820 825 830

Gln Leu Ala Leu Asp Arg Phe Arg Arg Ala Phe Cys Phe Val Arg His
835 840 845

Thr Leu Glu His Phe Cys His Lys Trp Cys Arg Lys Gln Asn Leu Pro
850 855 860

Gln Gln Lys Glu Val Ala Gly Gly Cys Ala Ala Gln Ser Lys Asp Ile
865 870 875 880

Ile Pro Leu Val Met Glu Met Lys Arg Gly Ser Glu Thr Gln Glu Glu
885 890 895

Leu Gly Ile Leu Thr Ser Val Pro Lys Thr Leu Gly Val Arg His Asp
900 905 910

Trp Thr Trp Leu Ala Pro Leu Ala Glu Glu Glu Asp Asp Val Glu Phe
915 920 925

Ser Gly Glu Asp Asn Ala Gln Arg Ile Thr Gln Pro Glu Pro Glu Gln
930 935 940

Gln Ala Tyr Glu Leu His Gln Glu Asn Lys Lys Pro Thr Ser Gln Arg

| | | | |
|---|------|------|------|
| 945 | 950 | 955 | 960 |
| Val Gln Ser Val Glu Ile Asp Met Phe Ser Glu Asp Glu Pro His Leu | 965 | 970 | 975 |
| Thr Ile Gln Asp Pro Arg Lys Lys Ser Asp Val Thr Ser Ile Leu Ser | 980 | 985 | 990 |
| Glu Cys Ser Thr Ile Asp Leu Gln Asp Gly Phe Gly Trp Leu Pro Glu | 995 | 1000 | 1005 |
| Met Val Pro Lys Lys Gln Pro Glu Arg Cys Leu Pro Lys Gly Phe | 1010 | 1015 | 1020 |
| Gly Cys Cys Phe Pro Cys Cys Ser Val Asp Lys Arg Lys Pro Pro | 1025 | 1030 | 1035 |
| Trp Val Ile Trp Trp Asn Leu Arg Lys Thr Cys Tyr Gln Ile Val | 1040 | 1045 | 1050 |
| Lys His Ser Trp Phe Glu Ser Phe Ile Ile Phe Val Ile Leu Leu | 1055 | 1060 | 1065 |
| Ser Ser Gly Ala Leu Ile Phe Glu Asp Val His Leu Glu Asn Gln | 1070 | 1075 | 1080 |
| Pro Lys Ile Gln Glu Leu Leu Asn Cys Thr Asp Ile Ile Phe Thr | 1085 | 1090 | 1095 |
| His Ile Phe Ile Leu Glu Met Val Leu Lys Trp Val Ala Phe Gly | 1100 | 1105 | 1110 |
| Phe Gly Lys Tyr Phe Thr Ser Ala Trp Cys Cys Leu Asp Phe Ile | 1115 | 1120 | 1125 |
| Ile Val Ile Val Ser Val Thr Thr Leu Ile Asn Leu Met Glu Leu | 1130 | 1135 | 1140 |
| Lys Ser Phe Arg Thr Leu Arg Ala Leu Arg Pro Leu Arg Ala Leu | 1145 | 1150 | 1155 |
| Ser Gln Phe Glu Gly Met Lys Val Val Val Asn Ala Leu Ile Gly | 1160 | 1165 | 1170 |
| Ala Ile Pro Ala Ile Leu Asn Val Leu Leu Val Cys Leu Ile Phe | 1175 | 1180 | 1185 |

| | | | | | | | | | | | | | | |
|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Trp | Leu | Val | Phe | Cys | Ile | Leu | Gly | Val | Tyr | Phe | Phe | Ser | Gly | Lys |
| 1190 | | | | | | 1195 | | | | | 1200 | | | |
| Phe | Gly | Lys | Cys | Ile | Asn | Gly | Thr | Asp | Ser | Val | Ile | Asn | Tyr | Thr |
| 1205 | | | | | | 1210 | | | | | 1215 | | | |
| Ile | Ile | Thr | Asn | Lys | Ser | Gln | Cys | Glu | Ser | Gly | Asn | Phe | Ser | Trp |
| 1220 | | | | | | 1225 | | | | | 1230 | | | |
| Ile | Asn | Gln | Lys | Val | Asn | Phe | Asp | Asn | Val | Gly | Asn | Ala | Tyr | Leu |
| 1235 | | | | | | 1240 | | | | | 1245 | | | |
| Ala | Leu | Leu | Gln | Val | Ala | Thr | Phe | Lys | Gly | Trp | Met | Asp | Ile | Ile |
| 1250 | | | | | | 1255 | | | | | 1260 | | | |
| Tyr | Ala | Ala | Val | Asp | Ser | Thr | Glu | Lys | Glu | Gln | Gln | Pro | Glu | Phe |
| 1265 | | | | | | 1270 | | | | | 1275 | | | |
| Glu | Ser | Asn | Ser | Leu | Gly | Tyr | Ile | Tyr | Phe | Val | Val | Phe | Ile | Ile |
| 1280 | | | | | | 1285 | | | | | 1290 | | | |
| Phe | Gly | Ser | Phe | Phe | Thr | Leu | Asn | Leu | Phe | Ile | Gly | Val | Ile | Ile |
| 1295 | | | | | | 1300 | | | | | 1305 | | | |
| Asp | Asn | Phe | Asn | Gln | Gln | Gln | Lys | Lys | Leu | Gly | Gly | Gln | Asp | Ile |
| 1310 | | | | | | 1315 | | | | | 1320 | | | |
| Phe | Met | Thr | Glu | Glu | Gln | Lys | Lys | Tyr | Tyr | Asn | Ala | Met | Lys | Lys |
| 1325 | | | | | | 1330 | | | | | 1335 | | | |
| Leu | Gly | Ser | Lys | Lys | Pro | Gln | Lys | Pro | Ile | Pro | Arg | Pro | Leu | Asn |
| 1340 | | | | | | 1345 | | | | | 1350 | | | |
| Lys | Cys | Gln | Gly | Leu | Val | Phe | Asp | Ile | Val | Thr | Ser | Gln | Ile | Phe |
| 1355 | | | | | | 1360 | | | | | 1365 | | | |
| Asp | Ile | Ile | Ile | Ile | Ser | Leu | Ile | Ile | Leu | Asn | Met | Ile | Ser | Met |
| 1370 | | | | | | 1375 | | | | | 1380 | | | |
| Met | Ala | Glu | Ser | Tyr | Asn | Gln | Pro | Lys | Ala | Met | Lys | Ser | Ile | Leu |
| 1385 | | | | | | 1390 | | | | | 1395 | | | |
| Asp | His | Leu | Asn | Trp | Val | Phe | Val | Val | Ile | Phe | Thr | Leu | Glu | Cys |
| 1400 | | | | | | 1405 | | | | | 1410 | | | |

| | | | | | | |
|---------|-----------------|---------|-----------------|-----------------|-------------|-------------|
| Leu Ile | Lys Ile | Phe Ala | Leu | Arg Gln Tyr Tyr | Phe | Thr Asn Gly |
| 1415 | | | 1420 | | 1425 | |
| Trp Asn | Leu Phe Asp Cys | Val | Val Val Leu Leu | Ser | Ile Val Ser | |
| 1430 | | 1435 | | 1440 | | |
| Thr Met | Ile Ser Thr Leu | Glu | Asn Gln Glu His | Ile | Pro Phe Pro | |
| 1445 | | 1450 | | 1455 | | |
| Pro Thr | Leu Phe Arg Ile | Val | Arg Leu Ala Arg | Ile | Gly Arg Ile | |
| 1460 | | 1465 | | 1470 | | |
| Leu Arg | Leu Val Arg Ala | Ala | Arg Gly Ile Arg | Thr | Leu Leu Phe | |
| 1475 | | 1480 | | 1485 | | |
| Ala Leu | Met Met Ser Leu | Pro | Ser Leu Phe Asn | Ile | Gly Leu Leu | |
| 1490 | | 1495 | | 1500 | | |
| Leu Phe | Leu Ile Met Phe | Ile | Tyr Ala Ile Leu | Gly | Met Asn Trp | |
| 1505 | | 1510 | | 1515 | | |
| Phe Ser | Lys Val Asn Pro | Glu | Ser Gly Ile Asp | Asp | Ile Phe Asn | |
| 1520 | | 1525 | | 1530 | | |
| Phe Lys | Thr Phe Ala Ser | Ser | Met Leu Cys Leu | Phe | Gln Ile Ser | |
| 1535 | | 1540 | | 1545 | | |
| Thr Ser | Ala Gly Trp Asp | Ser | Leu Leu Ser Pro | Met | Leu Arg Ser | |
| 1550 | | 1555 | | 1560 | | |
| Lys Glu | Ser Cys Asn Ser | Ser | Ser Glu Asn Cys | His | Leu Pro Gly | |
| 1565 | | 1570 | | 1575 | | |
| Ile Ala | Thr Ser Tyr Phe | Val | Ser Tyr Ile Ile | Ile | Ser Phe Leu | |
| 1580 | | 1585 | | 1590 | | |
| Ile Val | Val Asn Met Tyr | Ile | Ala Val Ile Leu | Glu | Asn Phe Asn | |
| 1595 | | 1600 | | 1605 | | |
| Thr Ala | Thr Glu Glu Ser | Glu | Asp Pro Leu Gly | Glu | Asp Asp Phe | |
| 1610 | | 1615 | | 1620 | | |
| Asp Ile | Phe Tyr Glu Val | Trp | Glu Lys Phe Asp | Pro | Glu Ala Thr | |
| 1625 | | 1630 | | 1635 | | |

Gln Phe Ile Lys Tyr Ser Ala Leu Ser Asp Phe Ala Asp Ala Leu
 1640 1645 1650

Pro Glu Pro Leu Arg Val Ala Lys Pro Asn Lys Tyr Gln Phe Leu
 1655 1660 1665

Val Met Asp Leu Pro Met Val Ser Glu Asp Arg Leu His Cys Met
 1670 1675 1680

Asp Ile Leu Phe Ala Phe Thr Ala Arg Val Leu Gly Gly Ser Asp
 1685 1690 1695

Gly Leu Asp Ser Met Lys Ala Met Met Glu Glu Lys Phe Met Glu
 1700 1705 1710

Ala Asn Pro Leu Lys Lys Leu Tyr Glu Pro Ile Val Thr Thr Thr
 1715 1720 1725

Lys Arg Lys Glu Glu Glu Arg Gly Ala Ala Ile Ile Gln Lys Ala
 1730 1735 1740

Phe Arg Lys Tyr Met Met Lys Val Thr Lys Gly Asp Gln Gly Asp
 1745 1750 1755

Gln Asn Asp Leu Glu Asn Gly Pro His Ser Pro Leu Gln Thr Leu
 1760 1765 1770

Cys Asn Gly Asp Leu Ser Ser Phe Gly Val Ala Lys Gly Lys Val
 1775 1780 1785

His Cys Asp
 1790

<210> 5
 <211> 5822
 <212> DNA
 <213> Mus musculus

<220>
 <221> CDS
 <222> (19)..(5313)
 <223>

<220>
 <221> misc_feature
 <222> (5804)..(5804)
 <223> n = a or t or c or g


```

<400> 5
tctgagccaa ggggtgaag atg gag gag agg tac tat cca gtg atc ttc cca      51
                        Met Glu Glu Arg Tyr Tyr Pro Val Ile Phe Pro
                        1          5          10

gac gag agg aat ttc cgc ccc ttc act ttc gac tct ttg gct gca ata      99
Asp Glu Arg Asn Phe Arg Pro Phe Thr Phe Asp Ser Leu Ala Ala Ile
                        15          20          25

gag aag cgg atc acc atc caa aag gag aag aag aaa tcc aaa gac aag      147
Glu Lys Arg Ile Thr Ile Gln Lys Glu Lys Lys Lys Ser Lys Asp Lys
                        30          35          40

gca gca act gag ccc cag cct cgg cct cag ctc gac cta aag gcc tcc      195
Ala Ala Thr Glu Pro Gln Pro Arg Pro Gln Leu Asp Leu Lys Ala Ser
                        45          50          55

agg aag tta cct aag ctc tat ggc gac gtt ccc cct gac ctt ata gcg      243
Arg Lys Leu Pro Lys Leu Tyr Gly Asp Val Pro Pro Asp Leu Ile Ala
60          65          70          75

aag ccc ctg gaa gat ctg gac cca ttt tac aaa gac cat aag aca ttc      291
Lys Pro Leu Glu Asp Leu Asp Pro Phe Tyr Lys Asp His Lys Thr Phe
                        80          85          90

atg gta ttg aac aag aag aga aca atc tat cgc ttc agc gcc aag agg      339
Met Val Leu Asn Lys Lys Arg Thr Ile Tyr Arg Phe Ser Ala Lys Arg
                        95          100          105

gcc ttg ttc att ctg ggg cct ttt aat ccc atc aga agc ttc atg att      387
Ala Leu Phe Ile Leu Gly Pro Phe Asn Pro Ile Arg Ser Phe Met Ile
                        110          115          120

cgc atc tct gtc cat tca gtc ttc agc atg ttc att atc tgc aca gtg      435
Arg Ile Ser Val His Ser Val Phe Ser Met Phe Ile Ile Cys Thr Val
125          130          135

atc atc aac tgt atg ttc atg gct aat aat tct tct gtg gac agt cgt      483
Ile Ile Asn Cys Met Phe Met Ala Asn Asn Ser Ser Val Asp Ser Arg
140          145          150          155

cct agc agt aac att ccc gaa tac gtc ttc att ggg att tat gtt tta      531
Pro Ser Ser Asn Ile Pro Glu Tyr Val Phe Ile Gly Ile Tyr Val Leu
                        160          165          170

gaa gct gtg att aaa ata ttg gca aga ggc ttc att gtg gat gag ttt      579
Glu Ala Val Ile Lys Ile Leu Ala Arg Gly Phe Ile Val Asp Glu Phe
                        175          180          185

tcc tac ctc cga gat cct tgg aac tgg ctg gac ttc att gtc atc gga      627
Ser Tyr Leu Arg Asp Pro Trp Asn Trp Leu Asp Phe Ile Val Ile Gly
190          195          200

aca gcg ata gcg cct tgt ttt ctc ggt aac aaa gtc aat aat ctt tcc      675
Thr Ala Ile Ala Pro Cys Phe Leu Gly Asn Lys Val Asn Asn Leu Ser
205          210          215

act cta cgt acc ttc cga gtg ttg aga gct ctg aaa gcc att tct gta      723
Thr Leu Arg Thr Phe Arg Val Leu Arg Ala Leu Lys Ala Ile Ser Val
220          225          230          235

```

| | |
|---|------|
| atc tca ggt ctg aag gtc atc gtg ggt gcc ctg ctg cgc tcc gtg aag | 771 |
| Ile Ser Gly Leu Lys Val Ile Val Gly Ala Leu Leu Arg Ser Val Lys | |
| 240 245 250 | |
| aag cta gtg gac gtg atg gtc ctc act ctc ttt tgc ctc agc atc ttt | 819 |
| Lys Leu Val Asp Val Met Val Leu Thr Leu Phe Cys Leu Ser Ile Phe | |
| 255 260 265 | |
| gcc ctg gtt ggt cag cag ctc ttc atg gga att ctg agc cag aaa tgt | 867 |
| Ala Leu Val Gly Gln Gln Leu Phe Met Gly Ile Leu Ser Gln Lys Cys | |
| 270 275 280 | |
| att aag gac gac tgt ggc cct aac gct ttt tcc aac aag gat tgc ttt | 915 |
| Ile Lys Asp Asp Cys Gly Pro Asn Ala Phe Ser Asn Lys Asp Cys Phe | |
| 285 290 295 | |
| gta aaa gaa aat gat agc gag gac ttc ata atg tgt ggc aac tgg ctc | 963 |
| Val Lys Glu Asn Asp Ser Glu Asp Phe Ile Met Cys Gly Asn Trp Leu | |
| 300 305 310 315 | |
| ggc aga aga tcc tgc ccc gat ggt tcc acg tgc aat aaa acc aca ttt | 1011 |
| Gly Arg Arg Ser Cys Pro Asp Gly Ser Thr Cys Asn Lys Thr Thr Phe | |
| 320 325 330 | |
| aac cca gat tat aat tat aca aac ttt gac agc ttt ggc tgg tct ttt | 1059 |
| Asn Pro Asp Tyr Asn Tyr Thr Asn Phe Asp Ser Phe Gly Trp Ser Phe | |
| 335 340 345 | |
| ctc gcc atg ttc cgg gtt atg act caa gac tcc tgg gag aag ctt tat | 1107 |
| Leu Ala Met Phe Arg Val Met Thr Gln Asp Ser Trp Glu Lys Leu Tyr | |
| 350 355 360 | |
| cga cag atc ctt cgc acc tcc ggg atc tac ttt gtc ttc ttc ttc gtg | 1155 |
| Arg Gln Ile Leu Arg Thr Ser Gly Ile Tyr Phe Val Phe Phe Phe Val | |
| 365 370 375 | |
| gtc gtc atc ttc ctg ggc tct ttc tac ctg ctt aac tta acc ctg gct | 1203 |
| Val Val Ile Phe Leu Gly Ser Phe Tyr Leu Leu Asn Leu Thr Leu Ala | |
| 380 385 390 395 | |
| gtc gtc acc atg gct tac gag gaa cag aac aga aat gtc gct gcc gag | 1251 |
| Val Val Thr Met Ala Tyr Glu Glu Gln Asn Arg Asn Val Ala Ala Glu | |
| 400 405 410 | |
| aca gag gcc aag gag aag atg ttt cag gaa gcc cag cag ctg ttg agg | 1299 |
| Thr Glu Ala Lys Glu Lys Met Phe Gln Glu Ala Gln Gln Leu Leu Arg | |
| 415 420 425 | |
| gag gaa aag gag gct ctg gtt gcc atg gga att gac aga act tcc ctt | 1347 |
| Glu Glu Lys Glu Ala Leu Val Ala Met Gly Ile Asp Arg Thr Ser Leu | |
| 430 435 440 | |
| aat tcc ctc caa gct tcg tcc ttt tcc cca aag aag agg aag ttt ttt | 1395 |
| Asn Ser Leu Gln Ala Ser Ser Phe Ser Pro Lys Lys Arg Lys Phe Phe | |
| 445 450 455 | |
| ggc agt aag aca aga aag tcc ttc ttt atg aga ggg tcc aag aca gcc | 1443 |
| Gly Ser Lys Thr Arg Lys Ser Phe Phe Met Arg Gly Ser Lys Thr Ala | |
| 460 465 470 475 | |
| cga gcc tca gcg tcc gat tca gag gac gat gcc tct aaa aac cca caa | 1491 |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Arg | Ala | Ser | Ala | Ser | Asp | Ser | Glu | Asp | Asp | Ala | Ser | Lys | Asn | Pro | Gln | |
| | | | | 480 | | | | | 485 | | | | | 490 | | |
| ctc | ctt | gag | caa | aca | aaa | cga | cta | tcc | cag | aac | ttg | ccc | gta | gaa | ctc | 1539 |
| Leu | Leu | Glu | Gln | Thr | Lys | Arg | Leu | Ser | Gln | Asn | Leu | Pro | Val | Glu | Leu | |
| | | | 495 | | | | | 500 | | | | | 505 | | | |
| ttt | gat | gag | cac | gtg | gac | ccc | ctc | cat | agg | cag | aga | gcg | ctg | agt | gcc | 1587 |
| Phe | Asp | Glu | His | Val | Asp | Pro | Leu | His | Arg | Gln | Arg | Ala | Leu | Ser | Ala | |
| | | 510 | | | | | 515 | | | | | 520 | | | | |
| gtc | agt | atc | tta | acc | atc | acc | atg | cag | gaa | caa | gaa | aaa | tcc | cag | gag | 1635 |
| Val | Ser | Ile | Leu | Thr | Ile | Thr | Met | Gln | Glu | Gln | Glu | Lys | Ser | Gln | Glu | |
| | 525 | | | | | 530 | | | | | 535 | | | | | |
| cct | tgt | ttc | ccg | tgt | ggg | aaa | aac | ttg | gca | tcc | aag | tac | ctg | gtg | tgg | 1683 |
| Pro | Cys | Phe | Pro | Cys | Gly | Lys | Asn | Leu | Ala | Ser | Lys | Tyr | Leu | Val | Trp | |
| 540 | | | | | 545 | | | | | 550 | | | | | 555 | |
| gaa | tgt | agc | cct | ccg | tgg | ctg | tgc | ata | aag | aag | gtc | ctg | cag | act | atc | 1731 |
| Glu | Cys | Ser | Pro | Pro | Trp | Leu | Cys | Ile | Lys | Lys | Val | Leu | Gln | Thr | Ile | |
| | | | | 560 | | | | | 565 | | | | | 570 | | |
| atg | aca | gac | ccc | ttc | act | gag | ctg | gcc | atc | acc | atc | tgc | atc | atc | gtc | 1779 |
| Met | Thr | Asp | Pro | Phe | Thr | Glu | Leu | Ala | Ile | Thr | Ile | Cys | Ile | Ile | Val | |
| | | | 575 | | | | | 580 | | | | | 585 | | | |
| aat | act | gtc | ttc | ttg | gcc | atg | gaa | cac | cac | aat | atg | gat | aac | tct | tta | 1827 |
| Asn | Thr | Val | Phe | Leu | Ala | Met | Glu | His | His | Asn | Met | Asp | Asn | Ser | Leu | |
| | | 590 | | | | | 595 | | | | | 600 | | | | |
| aaa | gac | ata | ctg | aaa | ata | gga | aac | tgg | gtt | ttc | act | gga | att | ttc | ata | 1875 |
| Lys | Asp | Ile | Leu | Lys | Ile | Gly | Asn | Trp | Val | Phe | Thr | Gly | Ile | Phe | Ile | |
| | 605 | | | | | 610 | | | | | 615 | | | | | |
| gcg | gaa | atg | tgt | ctc | aag | atc | att | gcg | cta | gac | cct | tac | cac | tac | ttc | 1923 |
| Ala | Glu | Met | Cys | Leu | Lys | Ile | Ile | Ala | Leu | Asp | Pro | Tyr | His | Tyr | Phe | |
| 620 | | | | | 625 | | | | | 630 | | | | | 635 | |
| cgg | cac | ggc | tgg | aac | atc | ttt | gac | agc | att | gtg | gcc | ctt | gtg | agt | ctc | 1971 |
| Arg | His | Gly | Trp | Asn | Ile | Phe | Asp | Ser | Ile | Val | Ala | Leu | Val | Ser | Leu | |
| | | | | 640 | | | | | 645 | | | | | 650 | | |
| gct | gac | gtg | ctc | ttc | cac | aaa | ctg | tct | aaa | aac | ctc | tcc | ttc | ttg | gct | 2019 |
| Ala | Asp | Val | Leu | Phe | His | Lys | Leu | Ser | Lys | Asn | Leu | Ser | Phe | Leu | Ala | |
| | | | 655 | | | | | 660 | | | | | 665 | | | |
| tcc | ctc | aga | gtg | ctg | agg | gtc | ttc | aag | tta | gcc | aaa | tcc | tgg | ccc | aca | 2067 |
| Ser | Leu | Arg | Val | Leu | Arg | Val | Phe | Lys | Leu | Ala | Lys | Ser | Trp | Pro | Thr | |
| | | 670 | | | | | 675 | | | | | | 680 | | | |
| tta | aac | act | ctc | att | aag | atc | atc | ggc | cac | tcc | gtg | ggt | gcg | ctc | gga | 2115 |
| Leu | Asn | Thr | Leu | Ile | Lys | Ile | Ile | Gly | His | Ser | Val | Gly | Ala | Leu | Gly | |
| | 685 | | | | | 690 | | | | | 695 | | | | | |
| aac | ctg | act | gtg | gtc | cta | acg | atc | gtg | gtc | ttc | atc | ttt | tcc | gtg | gtt | 2163 |
| Asn | Leu | Thr | Val | Val | Leu | Thr | Ile | Val | Val | Phe | Ile | Phe | Ser | Val | Val | |
| 700 | | | | | 705 | | | | | 710 | | | | | 715 | |
| ggc | atg | cgg | ctc | ttt | ggt | gcc | aag | ttt | aac | aag | act | tgc | tcc | acc | tct | 2211 |
| Gly | Met | Arg | Leu | Phe | Gly | Ala | Lys | Phe | Asn | Lys | Thr | Cys | Ser | Thr | Ser | |

| 720 | | | | 725 | | | | 730 | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| ccg | gag | tcc | ctc | cgg | cgc | tgg | cac | atg | ggg | gat | ttc | tac | cat | tcc | ttc | 2259 |
| Pro | Glu | Ser | Leu | Arg | Arg | Trp | His | Met | Gly | Asp | Phe | Tyr | His | Ser | Phe | |
| 735 | | | | 740 | | | | 745 | | | | | | | | |
| ctg | gtg | gtg | ttc | cgc | atc | ctc | tgt | ggg | gag | tgg | atc | gag | aac | atg | tgg | 2307 |
| Leu | Val | Val | Phe | Arg | Ile | Leu | Cys | Gly | Glu | Trp | Ile | Glu | Asn | Met | Trp | |
| 750 | | | | 755 | | | | 760 | | | | | | | | |
| gaa | tgc | atg | cag | gag | atg | gaa | ggc | tcc | ccg | ctg | tgt | gtc | atc | gtc | ttt | 2355 |
| Glu | Cys | Met | Gln | Glu | Met | Glu | Gly | Ser | Pro | Leu | Cys | Val | Ile | Val | Phe | |
| 765 | | | | 770 | | | | 775 | | | | | | | | |
| gtg | ctg | atc | atg | gtg | gtc | ggg | aag | ctc | gtg | gtg | ctt | aac | ctc | ttc | att | 2403 |
| Val | Leu | Ile | Met | Val | Val | Gly | Lys | Leu | Val | Val | Leu | Asn | Leu | Phe | Ile | |
| 780 | | | | 785 | | | | 790 | | | | 795 | | | | |
| gcc | ttg | ctg | ctc | aat | tcc | ttc | agc | aat | gag | gaa | aag | gat | ggg | aac | cca | 2451 |
| Ala | Leu | Leu | Leu | Asn | Ser | Phe | Ser | Asn | Glu | Glu | Lys | Asp | Gly | Asn | Pro | |
| 800 | | | | 805 | | | | 810 | | | | | | | | |
| gaa | gga | gag | acc | agg | aaa | acc | aaa | gtg | cag | cta | gcc | ctg | gat | cgg | ttc | 2499 |
| Glu | Gly | Glu | Thr | Arg | Lys | Thr | Lys | Val | Gln | Leu | Ala | Leu | Asp | Arg | Phe | |
| 815 | | | | 820 | | | | 825 | | | | | | | | |
| agc | cga | gcg | ttc | tac | ttc | atg | gcg | cgc | gct | ctt | cag | aat | ttc | tgt | tgc | 2547 |
| Ser | Arg | Ala | Phe | Tyr | Phe | Met | Ala | Arg | Ala | Leu | Gln | Asn | Phe | Cys | Cys | |
| 830 | | | | 835 | | | | 840 | | | | | | | | |
| aag | aga | tgc | agg | agg | caa | aac | tcg | cca | aag | cca | aat | gag | gca | aca | gaa | 2595 |
| Lys | Arg | Cys | Arg | Arg | Gln | Asn | Ser | Pro | Lys | Pro | Asn | Glu | Ala | Thr | Glu | |
| 845 | | | | 850 | | | | 855 | | | | | | | | |
| agc | ttt | gct | ggg | gag | agt | aga | gac | aca | gcc | acc | ctg | gat | aca | agg | tcc | 2643 |
| Ser | Phe | Ala | Gly | Glu | Ser | Arg | Asp | Thr | Ala | Thr | Leu | Asp | Thr | Arg | Ser | |
| 860 | | | | 865 | | | | 870 | | | | 875 | | | | |
| tgg | aag | gag | tat | gat | tca | gaa | atg | act | ctg | tac | act | ggg | cag | gcc | ggg | 2691 |
| Trp | Lys | Glu | Tyr | Asp | Ser | Glu | Met | Thr | Leu | Tyr | Thr | Gly | Gln | Ala | Gly | |
| 880 | | | | 885 | | | | 890 | | | | | | | | |
| gct | cca | ctg | gcc | cca | ctg | gca | aaa | gaa | gag | gac | gat | atg | gaa | tgt | tgt | 2739 |
| Ala | Pro | Leu | Ala | Pro | Leu | Ala | Lys | Glu | Glu | Asp | Asp | Met | Glu | Cys | Cys | |
| 895 | | | | 900 | | | | 905 | | | | | | | | |
| ggg | gaa | tgt | gat | gcc | tca | cct | acc | tca | cag | cct | agt | gag | gaa | gct | cag | 2787 |
| Gly | Glu | Cys | Asp | Ala | Ser | Pro | Thr | Ser | Gln | Pro | Ser | Glu | Glu | Ala | Gln | |
| 910 | | | | 915 | | | | 920 | | | | | | | | |
| gcc | tgt | gac | ctc | cct | ctg | aag | acc | aag | cgg | ctc | ccc | agc | cca | gat | gac | 2835 |
| Ala | Cys | Asp | Leu | Pro | Leu | Lys | Thr | Lys | Arg | Leu | Pro | Ser | Pro | Asp | Asp | |
| 925 | | | | 930 | | | | 935 | | | | | | | | |
| cac | ggg | gtt | gaa | atg | gaa | gtg | ttt | tcc | gaa | gaa | gat | ccg | aat | tta | acc | 2883 |
| His | Gly | Val | Glu | Met | Glu | Val | Phe | Ser | Glu | Glu | Asp | Pro | Asn | Leu | Thr | |
| 940 | | | | 945 | | | | 950 | | | | 955 | | | | |
| ata | cag | agt | gct | cga | aag | aag | tct | gat | gcg | gca | agc | atg | ctc | tca | gaa | 2931 |
| Ile | Gln | Ser | Ala | Arg | Lys | Lys | Ser | Asp | Ala | Ala | Ser | Met | Leu | Ser | Glu | |
| 960 | | | | 965 | | | | 970 | | | | | | | | |

| | |
|---|------|
| tgc agc aca ata gac ctg aat gat atc ttt aga aat tta cag aaa aca | 2979 |
| Cys Ser Thr Ile Asp Leu Asn Asp Ile Phe Arg Asn Leu Gln Lys Thr | |
| 975 980 985 | |
| gtt tcc ccc caa aag caa cca gat cga tgc ttt ccc aag ggc ctc agt | 3027 |
| Val Ser Pro Gln Lys Gln Pro Asp Arg Cys Phe Pro Lys Gly Leu Ser | |
| 990 995 1000 | |
| tgt atc ttt cta tgt tgc aaa aca atc aaa aaa aag tcc ccc tgg | 3072 |
| Cys Ile Phe Leu Cys Cys Lys Thr Ile Lys Lys Lys Ser Pro Trp | |
| 1005 1010 1015 | |
| gtc ctg tgg tgg aat ctt cgg aaa acc tgc tac caa atc gtg aag | 3117 |
| Val Leu Trp Trp Asn Leu Arg Lys Thr Cys Tyr Gln Ile Val Lys | |
| 1020 1025 1030 | |
| cat agc tgg ttt gag agc ttc ata att ttt gtc atc ctg ctg agc | 3162 |
| His Ser Trp Phe Glu Ser Phe Ile Ile Phe Val Ile Leu Leu Ser | |
| 1035 1040 1045 | |
| agc gga gca ctg ata ttc gaa gat gtc aat ctt ccc agc cgg ccc | 3207 |
| Ser Gly Ala Leu Ile Phe Glu Asp Val Asn Leu Pro Ser Arg Pro | |
| 1050 1055 1060 | |
| caa gtt gaa aaa tta ctg aag tgt acc gat aat att ttc aca ttt | 3252 |
| Gln Val Glu Lys Leu Leu Lys Cys Thr Asp Asn Ile Phe Thr Phe | |
| 1065 1070 1075 | |
| att ttt ctc ctg gaa atg att ttg aag tgg gtg gcc ttt gga ttc | 3297 |
| Ile Phe Leu Leu Glu Met Ile Leu Lys Trp Val Ala Phe Gly Phe | |
| 1080 1085 1090 | |
| cgg aag tat ttc acc agt gcc tgg tgc tgg ctc gat ttc ctc att | 3342 |
| Arg Lys Tyr Phe Thr Ser Ala Trp Cys Trp Leu Asp Phe Leu Ile | |
| 1095 1100 1105 | |
| gtg gtg gtg tct gtg ctc agc ctc acg aac tta cca aac ttg aag | 3387 |
| Val Val Val Ser Val Leu Ser Leu Thr Asn Leu Pro Asn Leu Lys | |
| 1110 1115 1120 | |
| tcc ttc cgg aat ctg cga gcg ctg aga cct ctg cgg gca ctg tct | 3432 |
| Ser Phe Arg Asn Leu Arg Ala Leu Arg Pro Leu Arg Ala Leu Ser | |
| 1125 1130 1135 | |
| cag ttt gaa gga atg aag gtt gtt gtc aat gcc ctc atg agt gcc | 3477 |
| Gln Phe Glu Gly Met Lys Val Val Val Asn Ala Leu Met Ser Ala | |
| 1140 1145 1150 | |
| ata cct gcc atc ctc aat gtc ttg ctg gtc tgc ctc att ttc tgg | 3522 |
| Ile Pro Ala Ile Leu Asn Val Leu Leu Val Cys Leu Ile Phe Trp | |
| 1155 1160 1165 | |
| ctc ata ttt tgt atc ctg gga gta aat ttt ttt tct ggg aag ttt | 3567 |
| Leu Ile Phe Cys Ile Leu Gly Val Asn Phe Phe Ser Gly Lys Phe | |
| 1170 1175 1180 | |
| gga aga tgc att aat gga aca gac ata aat aaa tat ttc aac gct | 3612 |
| Gly Arg Cys Ile Asn Gly Thr Asp Ile Asn Lys Tyr Phe Asn Ala | |
| 1185 1190 1195 | |

| | |
|---|------|
| tcc aat gtt cca aac caa agc caa tgt tta gtt agt aat tac acg | 3657 |
| Ser Asn Val Pro Asn Gln Ser Gln Cys Leu Val Ser Asn Tyr Thr | |
| 1200 1205 1210 | |
| tggtg aaa gtc ccg aat gtc aac ttt gac aac gtg ggg aat gcc tac | 3702 |
| Trp Lys Val Pro Asn Val Asn Phe Asp Asn Val Gly Asn Ala Tyr | |
| 1215 1220 1225 | |
| ctt gcc ctg ctg caa gtg gcg acc tat aag ggc tgg ctg gac att | 3747 |
| Leu Ala Leu Leu Gln Val Ala Thr Tyr Lys Gly Trp Leu Asp Ile | |
| 1230 1235 1240 | |
| atg aat gca gct gtt gat tcc aga ggg aaa gat gag cag ccg gcc | 3792 |
| Met Asn Ala Ala Val Asp Ser Arg Gly Lys Asp Glu Gln Pro Ala | |
| 1245 1250 1255 | |
| ttt gag gcg aat cta tac gca tac ctt tac ttc gtg gtt ttt atc | 3837 |
| Phe Glu Ala Asn Leu Tyr Ala Tyr Leu Tyr Phe Val Val Phe Ile | |
| 1260 1265 1270 | |
| atc ttc ggc tca ttc ttt acc ctg aac ctc ttt atc ggt gtt att | 3882 |
| Ile Phe Gly Ser Phe Phe Thr Leu Asn Leu Phe Ile Gly Val Ile | |
| 1275 1280 1285 | |
| att gac aac ttc aat cag cag cag aaa aag tta ggt ggc caa gac | 3927 |
| Ile Asp Asn Phe Asn Gln Gln Gln Lys Lys Leu Gly Gly Gln Asp | |
| 1290 1295 1300 | |
| att ttt atg aca gaa gaa cag aag aaa tat taç aat gca atg aaa | 3972 |
| Ile Phe Met Thr Glu Glu Gln Lys Lys Tyr Tyr Asn Ala Met Lys | |
| 1305 1310 1315 | |
| aag tta gga acc aag aag cct caa aag ccc atc cca agg ccc ctg | 4017 |
| Lys Leu Gly Thr Lys Lys Pro Gln Lys Pro Ile Pro Arg Pro Leu | |
| 1320 1325 1330 | |
| aac aaa tgt caa gcc ttc gtg ttc gat ttg gtc aca agc cag gtc | 4062 |
| Asn Lys Cys Gln Ala Phe Val Phe Asp Leu Val Thr Ser Gln Val | |
| 1335 1340 1345 | |
| ttt gac gtc atc att ctg ggt ctt att gtc aca aac atg att atc | 4107 |
| Phe Asp Val Ile Ile Leu Gly Leu Ile Val Thr Asn Met Ile Ile | |
| 1350 1355 1360 | |
| atg atg gct gaa tct gaa ggc cag ccc aac gaa gtg aag aaa atc | 4152 |
| Met Met Ala Glu Ser Glu Gly Gln Pro Asn Glu Val Lys Lys Ile | |
| 1365 1370 1375 | |
| ttt gat att ctc aac ata gtc ttc gtg gtc atc ttt acc gta gag | 4197 |
| Phe Asp Ile Leu Asn Ile Val Phe Val Val Ile Phe Thr Val Glu | |
| 1380 1385 1390 | |
| tgt ctc atc aaa gtc ttt gct ttg agg caa cac tac ttc acc aat | 4242 |
| Cys Leu Ile Lys Val Phe Ala Leu Arg Gln His Tyr Phe Thr Asn | |
| 1395 1400 1405 | |
| ggc tgg aac tta ttt gat tgt gtg gtc gtg gtt ctt tcc atc att | 4287 |
| Gly Trp Asn Leu Phe Asp Cys Val Val Val Val Leu Ser Ile Ile | |
| 1410 1415 1420 | |
| agt acc ttg gtt tct ggc ttg gag aac agc aac gtc ttc ccg ccc | 4332 |

| | | | | | | | | | | | | | | | |
|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|------|
| Ser | Thr | Leu | Val | Ser | Gly | Leu | Glu | Asn | Ser | Asn | Val | Phe | Pro | Pro | |
| | 1425 | | | | | 1430 | | | | | 1435 | | | | |
| aca | ctc | ttc | agg | att | gtc | cgc | ttg | gct | cgg | atc | ggt | cga | atc | ctc | 4377 |
| Thr | Leu | Phe | Arg | Ile | Val | Arg | Leu | Ala | Arg | Ile | Gly | Arg | Ile | Leu | |
| | 1440 | | | | | 1445 | | | | | 1450 | | | | |
| aga | ctg | gtc | cgg | gcg | gct | cga | gga | atc | agg | aca | ctc | ctt | ttc | gcg | 4422 |
| Arg | Leu | Val | Arg | Ala | Ala | Arg | Gly | Ile | Arg | Thr | Leu | Leu | Phe | Ala | |
| | 1455 | | | | | 1460 | | | | | 1465 | | | | |
| ttg | atg | atg | tct | ctc | ccc | tct | ctc | ttc | aac | att | ggt | ctg | ctt | ctc | 4467 |
| Leu | Met | Met | Ser | Leu | Pro | Ser | Leu | Phe | Asn | Ile | Gly | Leu | Leu | Leu | |
| | 1470 | | | | | 1475 | | | | | 1480 | | | | |
| ttt | ctg | gtg | atg | ttc | att | tat | gcc | atc | ttt | ggg | atg | aac | tgg | ttt | 4512 |
| Phe | Leu | Val | Met | Phe | Ile | Tyr | Ala | Ile | Phe | Gly | Met | Asn | Trp | Phe | |
| | 1485 | | | | | 1490 | | | | | 1495 | | | | |
| tcc | aaa | gtg | aag | aga | ggc | tct | ggg | att | gat | gac | atc | ttc | aac | ttt | 4557 |
| Ser | Lys | Val | Lys | Arg | Gly | Ser | Gly | Ile | Asp | Asp | Ile | Phe | Asn | Phe | |
| | 1500 | | | | | 1505 | | | | | 1510 | | | | |
| gac | act | ttc | tcg | ggc | agc | atg | ctc | tgc | ctc | ttc | cag | ata | acc | act | 4602 |
| Asp | Thr | Phe | Ser | Gly | Ser | Met | Leu | Cys | Leu | Phe | Gln | Ile | Thr | Thr | |
| | 1515 | | | | | 1520 | | | | | 1525 | | | | |
| tca | gcc | ggc | tgg | gat | gct | ctc | ctc | aac | ccc | atg | ctg | gaa | tca | aaa | 4647 |
| Ser | Ala | Gly | Trp | Asp | Ala | Leu | Leu | Asn | Pro | Met | Leu | Glu | Ser | Lys | |
| | 1530 | | | | | 1535 | | | | | 1540 | | | | |
| gcc | tct | tgc | aat | tcc | tcc | tcc | caa | gag | agc | tgt | cag | cag | ccg | cag | 4692 |
| Ala | Ser | Cys | Asn | Ser | Ser | Ser | Gln | Glu | Ser | Cys | Gln | Gln | Pro | Gln | |
| | 1545 | | | | | 1550 | | | | | 1555 | | | | |
| ata | gcc | ata | gtc | tac | ttc | gtc | agc | tac | atc | atc | atc | tcc | ttt | ctc | 4737 |
| Ile | Ala | Ile | Val | Tyr | Phe | Val | Ser | Tyr | Ile | Ile | Ile | Ser | Phe | Leu | |
| | 1560 | | | | | 1565 | | | | | 1570 | | | | |
| att | gtg | gtt | aac | atg | tac | ata | gct | gtg | att | cta | gag | aac | ttc | aac | 4782 |
| Ile | Val | Val | Asn | Met | Tyr | Ile | Ala | Val | Ile | Leu | Glu | Asn | Phe | Asn | |
| | 1575 | | | | | 1580 | | | | | 1585 | | | | |
| aca | gcc | aca | gag | gag | agc | gag | gac | ccc | ctg | ggc | gaa | gac | gac | ttt | 4827 |
| Thr | Ala | Thr | Glu | Glu | Ser | Glu | Asp | Pro | Leu | Gly | Glu | Asp | Asp | Phe | |
| | 1590 | | | | | 1595 | | | | | 1600 | | | | |
| gag | atc | ttc | tat | gag | atc | tgg | gag | aag | ttt | gac | ccc | gaa | gca | aca | 4872 |
| Glu | Ile | Phe | Tyr | Glu | Ile | Trp | Glu | Lys | Phe | Asp | Pro | Glu | Ala | Thr | |
| | 1605 | | | | | 1610 | | | | | 1615 | | | | |
| cag | ttc | atc | cag | tac | tca | tcc | ctc | tct | gac | ttc | gcc | gac | gcc | ctg | 4917 |
| Gln | Phe | Ile | Gln | Tyr | Ser | Ser | Leu | Ser | Asp | Phe | Ala | Asp | Ala | Leu | |
| | 1620 | | | | | 1625 | | | | | 1630 | | | | |
| ccc | gag | ccg | ttg | cgt | gtg | gcc | aag | ccc | aac | agg | ttt | cag | ttt | ctc | 4962 |
| Pro | Glu | Pro | Leu | Arg | Val | Ala | Lys | Pro | Asn | Arg | Phe | Gln | Phe | Leu | |
| | 1635 | | | | | 1640 | | | | | 1645 | | | | |
| atg | atg | gac | ttg | ccc | atg | gtg | atg | ggg | gat | cgc | ctc | cat | tgc | atg | 5007 |
| Met | Met | Asp | Leu | Pro | Met | Val | Met | Gly | Asp | Arg | Leu | His | Cys | Met | |

| 1650 | 1655 | 1660 | |
|-----------------------------------|-----------------------|-------------|------|
| gat gtt ctc ttt gct ttc acc | acc agg gtc ctc ggg | aac tcc agc | 5052 |
| Asp Val Leu Phe Ala Phe Thr | Thr Arg Val Leu Gly | Asn Ser Ser | |
| 1665 | 1670 | 1675 | |
| ggc ttg gat acc atg aaa gcc | atg atg gag gag aag | ttc atg gag | 5097 |
| Gly Leu Asp Thr Met Lys Ala | Met Met Glu Glu Lys | Phe Met Glu | |
| 1680 | 1685 | 1690 | |
| gcc aat cct ttc aag aag ttg | tac gag ccc att gtc | acc acc aca | 5142 |
| Ala Asn Pro Phe Lys Lys Leu | Tyr Glu Pro Ile Val | Thr Thr Thr | |
| 1695 | 1700 | 1705 | |
| aag agg aag gag gag gag gaa | tgt gcc gct gtc atc | cag agg gcc | 5187 |
| Lys Arg Lys Glu Glu Glu Glu | Cys Ala Ala Val Ile | Gln Arg Ala | |
| 1710 | 1715 | 1720 | |
| tac cgg aga cac atg gag aag | atg atc aag ctg aag | ctg aaa ggc | 5232 |
| Tyr Arg Arg His Met Glu Lys | Met Ile Lys Leu Lys | Leu Lys Gly | |
| 1725 | 1730 | 1735 | |
| agg tca agt tca tcg ctc cag | gtg ttt tgc aat gga | gac ttg tct | 5277 |
| Arg Ser Ser Ser Ser Leu Gln | Val Phe Cys Asn Gly | Asp Leu Ser | |
| 1740 | 1745 | 1750 | |
| agc ttg gat gtg ccc aag atc | aag gtt cat tgt gac | tgaaaccccc | 5323 |
| Ser Leu Asp Val Pro Lys Ile | Lys Val His Cys Asp | | |
| 1755 | 1760 | 1765 | |
| acctgcacgc ctacctcaca gcctcacagc | tcagccccca gcctctggcg | aacaagcggc | 5383 |
| ggactcaccg aacaggccgt tcaacttggt | tttttgggtg aaagaggtga | taggttggtg | 5443 |
| tccattttta aatgattcct ggaaagattg | aacgtcggaa catgttagaa | aggactgcc | 5503 |
| aggacatcca cagtaacgga aggcctgaag | gacagttcaa attatgtaaa | gaaacgagaa | 5563 |
| ggaaaggtca catgtctggt cagttttaag | tatgtgacct gccacatgta | gctcctttgc | 5623 |
| atgttaagtg agaagtcaaa accctgccat | aagtaaatag ctttggtgca | ggtgtttcta | 5683 |
| ccagtgtgctg ggatttgggt gtatggctca | aacctgaaag catgactctg | acttgtcagc | 5743 |
| acccaactt tcagaagctc tgatctctgt | cctaggtggt tgacaaataa | atacataaaa | 5803 |
| naaaaaaaaa aaaaaaaaa | | | 5822 |

<210> 6

<211> 1765

<212> PRT

<213> Mus musculus

<220>

<221> misc_feature

<222> (5804)..(5804)

<223> n = a or t or c or g

<400> 6

Met Glu Glu Arg Tyr Tyr Pro Val Ile Phe Pro Asp Glu Arg Asn Phe
 1 5 10 15

Arg Pro Phe Thr Phe Asp Ser Leu Ala Ala Ile Glu Lys Arg Ile Thr
 20 25 30

Ile Gln Lys Glu Lys Lys Lys Ser Lys Asp Lys Ala Ala Thr Glu Pro
 35 40 45

Gln Pro Arg Pro Gln Leu Asp Leu Lys Ala Ser Arg Lys Leu Pro Lys
 50 55 60

Leu Tyr Gly Asp Val Pro Pro Asp Leu Ile Ala Lys Pro Leu Glu Asp
 65 70 75 80

Leu Asp Pro Phe Tyr Lys Asp His Lys Thr Phe Met Val Leu Asn Lys
 85 90 95

Lys Arg Thr Ile Tyr Arg Phe Ser Ala Lys Arg Ala Leu Phe Ile Leu
 100 105 110

Gly Pro Phe Asn Pro Ile Arg Ser Phe Met Ile Arg Ile Ser Val His
 115 120 125

Ser Val Phe Ser Met Phe Ile Ile Cys Thr Val Ile Ile Asn Cys Met
 130 135 140

Phe Met Ala Asn Asn Ser Ser Val Asp Ser Arg Pro Ser Ser Asn Ile
 145 150 155 160

Pro Glu Tyr Val Phe Ile Gly Ile Tyr Val Leu Glu Ala Val Ile Lys
 165 170 175

Ile Leu Ala Arg Gly Phe Ile Val Asp Glu Phe Ser Tyr Leu Arg Asp
 180 185 190

Pro Trp Asn Trp Leu Asp Phe Ile Val Ile Gly Thr Ala Ile Ala Pro
 195 200 205

Cys Phe Leu Gly Asn Lys Val Asn Asn Leu Ser Thr Leu Arg Thr Phe
 210 215 220

Arg Val Leu Arg Ala Leu Lys Ala Ile Ser Val Ile Ser Gly Leu Lys
 225 230 235 240

Val Ile Val Gly Ala Leu Leu Arg Ser Val Lys Lys Leu Val Asp Val

| | | | | | | | | | | | | | | | | | |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| | | | | 245 | | | | | 250 | | | | | 255 | | | |
| Met | Val | Leu | Thr | Leu | Phe | Cys | Leu | Ser | Ile | Phe | Ala | Leu | Val | Gly | Gln | | |
| | | | 260 | | | | | 265 | | | | | 270 | | | | |
| Gln | Leu | Phe | Met | Gly | Ile | Leu | Ser | Gln | Lys | Cys | Ile | Lys | Asp | Asp | Cys | | |
| | | 275 | | | | | 280 | | | | | 285 | | | | | |
| Gly | Pro | Asn | Ala | Phe | Ser | Asn | Lys | Asp | Cys | Phe | Val | Lys | Glu | Asn | Asp | | |
| | 290 | | | | | 295 | | | | | 300 | | | | | | |
| Ser | Glu | Asp | Phe | Ile | Met | Cys | Gly | Asn | Trp | Leu | Gly | Arg | Arg | Ser | Cys | | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | | |
| Pro | Asp | Gly | Ser | Thr | Cys | Asn | Lys | Thr | Thr | Phe | Asn | Pro | Asp | Tyr | Asn | | |
| | | | | 325 | | | | | 330 | | | | | 335 | | | |
| Tyr | Thr | Asn | Phe | Asp | Ser | Phe | Gly | Trp | Ser | Phe | Leu | Ala | Met | Phe | Arg | | |
| | | | 340 | | | | | 345 | | | | | 350 | | | | |
| Val | Met | Thr | Gln | Asp | Ser | Trp | Glu | Lys | Leu | Tyr | Arg | Gln | Ile | Leu | Arg | | |
| | | 355 | | | | | 360 | | | | | 365 | | | | | |
| Thr | Ser | Gly | Ile | Tyr | Phe | Val | Phe | Phe | Phe | Val | Val | Val | Ile | Phe | Leu | | |
| | 370 | | | | | 375 | | | | | | 380 | | | | | |
| Gly | Ser | Phe | Tyr | Leu | Leu | Asn | Leu | Thr | Leu | Ala | Val | Val | Thr | Met | Ala | | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | | |
| Tyr | Glu | Glu | Gln | Asn | Arg | Asn | Val | Ala | Ala | Glu | Thr | Glu | Ala | Lys | Glu | | |
| | | | | 405 | | | | | 410 | | | | | 415 | | | |
| Lys | Met | Phe | Gln | Glu | Ala | Gln | Gln | Leu | Leu | Arg | Glu | Glu | Lys | Glu | Ala | | |
| | | | 420 | | | | | 425 | | | | | 430 | | | | |
| Leu | Val | Ala | Met | Gly | Ile | Asp | Arg | Thr | Ser | Leu | Asn | Ser | Leu | Gln | Ala | | |
| | | 435 | | | | | 440 | | | | | 445 | | | | | |
| Ser | Ser | Phe | Ser | Pro | Lys | Lys | Arg | Lys | Phe | Phe | Gly | Ser | Lys | Thr | Arg | | |
| | 450 | | | | | 455 | | | | | 460 | | | | | | |
| ----- | | | | | | | | | | | | | | | | | |
| Lys | Ser | Phe | Phe | Met | Arg | Gly | Ser | Lys | Thr | Ala | Arg | Ala | Ser | Ala | Ser | | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | | |
| Asp | Ser | Glu | Asp | Asp | Ala | Ser | Lys | Asn | Pro | Gln | Leu | Leu | Glu | Gln | Thr | | |
| | | | | 485 | | | | | 490 | | | | | 495 | | | |

Lys Arg Leu Ser Gln Asn Leu Pro Val Glu Leu Phe Asp Glu His Val
500 505 510

Asp Pro Leu His Arg Gln Arg Ala Leu Ser Ala Val Ser Ile Leu Thr
515 520 525

Ile Thr Met Gln Glu Gln Glu Lys Ser Gln Glu Pro Cys Phe Pro Cys
530 535 540

Gly Lys Asn Leu Ala Ser Lys Tyr Leu Val Trp Glu Cys Ser Pro Pro
545 550 555 560

Trp Leu Cys Ile Lys Lys Val Leu Gln Thr Ile Met Thr Asp Pro Phe
565 570 575

Thr Glu Leu Ala Ile Thr Ile Cys Ile Ile Val Asn Thr Val Phe Leu
580 585 590

Ala Met Glu His His Asn Met Asp Asn Ser Leu Lys Asp Ile Leu Lys
595 600 605

Ile Gly Asn Trp Val Phe Thr Gly Ile Phe Ile Ala Glu Met Cys Leu
610 615 620

Lys Ile Ile Ala Leu Asp Pro Tyr His Tyr Phe Arg His Gly Trp Asn
625 630 635 640

Ile Phe Asp Ser Ile Val Ala Leu Val Ser Leu Ala Asp Val Leu Phe
645 650 655

His Lys Leu Ser Lys Asn Leu Ser Phe Leu Ala Ser Leu Arg Val Leu
660 665 670

Arg Val Phe Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Thr Leu Ile
675 680 685

Lys Ile Ile Gly His Ser Val Gly Ala Leu Gly Asn Leu Thr Val Val
690 695 700

Leu Thr Ile Val Val Phe Ile Phe Ser Val Val Gly Met Arg Leu Phe
705 710 715 720

Gly Ala Lys Phe Asn Lys Thr Cys Ser Thr Ser Pro Glu Ser Leu Arg
725 730 735

Arg Trp His Met Gly Asp Phe Tyr His Ser Phe Leu Val Val Phe Arg
740 745 750

Ile Leu Cys Gly Glu Trp Ile Glu Asn Met Trp Glu Cys Met Gln Glu
755 760 765

Met Glu Gly Ser Pro Leu Cys Val Ile Val Phe Val Leu Ile Met Val
770 775 780

Val Gly Lys Leu Val Val Leu Asn Leu Phe Ile Ala Leu Leu Leu Asn
785 790 795 800

Ser Phe Ser Asn Glu Glu Lys Asp Gly Asn Pro Glu Gly Glu Thr Arg
805 810 815

Lys Thr Lys Val Gln Leu Ala Leu Asp Arg Phe Ser Arg Ala Phe Tyr
820 825 830

Phe Met Ala Arg Ala Leu Gln Asn Phe Cys Cys Lys Arg Cys Arg Arg
835 840 845

Gln Asn Ser Pro Lys Pro Asn Glu Ala Thr Glu Ser Phe Ala Gly Glu
850 855 860

Ser Arg Asp Thr Ala Thr Leu Asp Thr Arg Ser Trp Lys Glu Tyr Asp
865 870 875 880

Ser Glu Met Thr Leu Tyr Thr Gly Gln Ala Gly Ala Pro Leu Ala Pro
885 890 895

Leu Ala Lys Glu Glu Asp Asp Met Glu Cys Cys Gly Glu Cys Asp Ala
900 905 910

Ser Pro Thr Ser Gln Pro Ser Glu Glu Ala Gln Ala Cys Asp Leu Pro
915 920 925

Leu Lys Thr Lys Arg Leu Pro Ser Pro Asp Asp His Gly Val Glu Met
930 935 940

Glu Val Phe Ser Glu Glu Asp Pro Asn Leu Thr Ile Gln Ser Ala Arg
945 950 955 960

Lys Lys Ser Asp Ala Ala Ser Met Leu Ser Glu Cys Ser Thr Ile Asp
965 970 975

Leu Asn Asp Ile Phe Arg Asn Leu Gln Lys Thr Val Ser Pro Gln Lys
 980 985 990

Gln Pro Asp Arg Cys Phe Pro Lys Gly Leu Ser Cys Ile Phe Leu Cys
 995 1000 1005

Cys Lys Thr Ile Lys Lys Lys Ser Pro Trp Val Leu Trp Trp Asn
 1010 1015 1020

Leu Arg Lys Thr Cys Tyr Gln Ile Val Lys His Ser Trp Phe Glu
 1025 1030 1035

Ser Phe Ile Ile Phe Val Ile Leu Leu Ser Ser Gly Ala Leu Ile
 1040 1045 1050

Phe Glu Asp Val Asn Leu Pro Ser Arg Pro Gln Val Glu Lys Leu
 1055 1060 1065

Leu Lys Cys Thr Asp Asn Ile Phe Thr Phe Ile Phe Leu Leu Glu
 1070 1075 1080

Met Ile Leu Lys Trp Val Ala Phe Gly Phe Arg Lys Tyr Phe Thr
 1085 1090 1095

Ser Ala Trp Cys Trp Leu Asp Phe Leu Ile Val Val Val Ser Val
 1100 1105 1110

Leu Ser Leu Thr Asn Leu Pro Asn Leu Lys Ser Phe Arg Asn Leu
 1115 1120 1125

Arg Ala Leu Arg Pro Leu Arg Ala Leu Ser Gln Phe Glu Gly Met
 1130 1135 1140

Lys Val Val Val Asn Ala Leu Met Ser Ala Ile Pro Ala Ile Leu
 1145 1150 1155

Asn Val Leu Leu Val Cys Leu Ile Phe Trp Leu Ile Phe Cys Ile
 1160 1165 1170

Leu Gly Val Asn Phe Phe Ser Gly Lys Phe Gly Arg Cys Ile Asn
 1175 1180 1185

Gly Thr Asp Ile Asn Lys Tyr Phe Asn Ala Ser Asn Val Pro Asn
 1190 1195 1200

Gln Ser Gln Cys Leu Val Ser Asn Tyr Thr Trp Lys Val Pro Asn

1205

1210

1215

Val Asn Phe Asp Asn Val Gly Asn Ala Tyr Leu Ala Leu Leu Gln
 1220 1225 1230

Val Ala Thr Tyr Lys Gly Trp Leu Asp Ile Met Asn Ala Ala Val
 1235 1240 1245

Asp Ser Arg Gly Lys Asp Glu Gln Pro Ala Phe Glu Ala Asn Leu
 1250 1255 1260

Tyr Ala Tyr Leu Tyr Phe Val Val Phe Ile Ile Phe Gly Ser Phe
 1265 1270 1275

Phe Thr Leu Asn Leu Phe Ile Gly Val Ile Ile Asp Asn Phe Asn
 1280 1285 1290

Gln Gln Gln Lys Lys Leu Gly Gly Gln Asp Ile Phe Met Thr Glu
 1295 1300 1305

Glu Gln Lys Lys Tyr Tyr Asn Ala Met Lys Lys Leu Gly Thr Lys
 1310 1315 1320

Lys Pro Gln Lys Pro Ile Pro Arg Pro Leu Asn Lys Cys Gln Ala
 1325 1330 1335

Phe Val Phe Asp Leu Val Thr Ser Gln Val Phe Asp Val Ile Ile
 1340 1345 1350

Leu Gly Leu Ile Val Thr Asn Met Ile Ile Met Met Ala Glu Ser
 1355 1360 1365

Glu Gly Gln Pro Asn Glu Val Lys Lys Ile Phe Asp Ile Leu Asn
 1370 1375 1380

Ile Val Phe Val Val Ile Phe Thr Val Glu Cys Leu Ile Lys Val
 1385 1390 1395

Phe Ala Leu Arg Gln His Tyr Phe Thr Asn Gly Trp Asn Leu Phe
 1400 1405 1410

Asp Cys Val Val Val Val Leu Ser Ile Ile Ser Thr Leu Val Ser
 1415 1420 1425

Gly Leu Glu Asn Ser Asn Val Phe Pro Pro Thr Leu Phe Arg Ile
 1430 1435 1440

Val Arg Leu Ala Arg Ile Gly Arg Ile Leu Arg Leu Val Arg Ala
1445 1450 1455

Ala Arg Gly Ile Arg Thr Leu Leu Phe Ala Leu Met Met Ser Leu
1460 1465 1470

Pro Ser Leu Phe Asn Ile Gly Leu Leu Leu Phe Leu Val Met Phe
1475 1480 1485

Ile Tyr Ala Ile Phe Gly Met Asn Trp Phe Ser Lys Val Lys Arg
1490 1495 1500

Gly Ser Gly Ile Asp Asp Ile Phe Asn Phe Asp Thr Phe Ser Gly
1505 1510 1515

Ser Met Leu Cys Leu Phe Gln Ile Thr Thr Ser Ala Gly Trp Asp
1520 1525 1530

Ala Leu Leu Asn Pro Met Leu Glu Ser Lys Ala Ser Cys Asn Ser
1535 1540 1545

Ser Ser Gln Glu Ser Cys Gln Gln Pro Gln Ile Ala Ile Val Tyr
1550 1555 1560

Phe Val Ser Tyr Ile Ile Ile Ser Phe Leu Ile Val Val Asn Met
1565 1570 1575

Tyr Ile Ala Val Ile Leu Glu Asn Phe Asn Thr Ala Thr Glu Glu
1580 1585 1590

Ser Glu Asp Pro Leu Gly Glu Asp Asp Phe Glu Ile Phe Tyr Glu
1595 1600 1605

Ile Trp Glu Lys Phe Asp Pro Glu Ala Thr Gln Phe Ile Gln Tyr
1610 1615 1620

Ser Ser Leu Ser Asp Phe Ala Asp Ala Leu Pro Glu Pro Leu Arg
1625 1630 1635

~~Val Ala Lys Pro Asn Arg Phe Gln Phe Leu Met Met Asp Leu Pro~~
~~1640 1645 1650~~

Met Val Met Gly Asp Arg Leu His Cys Met Asp Val Leu Phe Ala
1655 1660 1665

Phe Thr Thr Arg Val Leu Gly Asn Ser Ser Gly Leu Asp Thr Met
 1670 1675 1680

Lys Ala Met Met Glu Glu Lys Phe Met Glu Ala Asn Pro Phe Lys
 1685 1690 1695

Lys Leu Tyr Glu Pro Ile Val Thr Thr Thr Lys Arg Lys Glu Glu
 1700 1705 1710

Glu Glu Cys Ala Ala Val Ile Gln Arg Ala Tyr Arg Arg His Met
 1715 1720 1725

Glu Lys Met Ile Lys Leu Lys Leu Lys Gly Arg Ser Ser Ser Ser
 1730 1735 1740

Leu Gln Val Phe Cys Asn Gly Asp Leu Ser Ser Leu Asp Val Pro
 1745 1750 1755

Lys Ile Lys Val His Cys Asp
 1760 1765

<210> 7
 <211> 23
 <212> DNA
 <213> Rattus norvegicus

<220>
 <221> misc_feature
 <223> Primer sequence

<400> 7
 gcaagaaatg caggaggaaa aac

23

<210> 8
 <211> 38
 <212> DNA
 <213> Rattus norvegicus

<220>
 <221> misc_feature
 <223> Primer sequence

<400> 8
 ataagaatgc ggccgccaac ctgtcacctc gttcagcc

38

<210> 9
 <211> 24
 <212> DNA
 <213> Rattus norvegicus

<220>
<221> misc_feature
<223> Primer sequence

<400> 9
gaacaaatgt caagcctttg tggt 24

<210> 10
<211> 28
<212> DNA
<213> Rattus norvegicus

<220>
<221> misc_feature
<223> Primer sequence

<400> 10
cagccatcat gataatcata tttaagac 28

<210> 11
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward strand of SalI linker with NotI/XbaI overhangs

<220>
<221> misc_feature
<223> Forward strand of SalI linker with NotI/XbaI overhangs

<400> 11
ggccgcaaag t'cgact 16

<210> 12
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse strand of SalI linker with NotI/XbaI overhangs

<220>
<221> misc_feature
<223> Reverse strand of SalI linker with NotI/XbaI overhangs

-----<400>--12-----
cgtttcagct gagatc 16

<210> 13
<211> 21
<212> DNA

<213> Rattus norvegicus

<220>

<221> misc_feature

<223> primer sequence

<400> 13

gccttcgtgg tcattctttac c

21

<210> 14

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> engineers NotI and ClaI sites at 3' end of rNaN ORF

<220>

<221> misc_feature

<223> primer sequence

<400> 14

aaaagcggcc gctttatcga tgcattgtg aaccttcacc

40

<210> 15

<211> 46

<212> DNA

<213> Artificial Sequence

<220>

<223> Forward primer amplifying GFP from pEGFP-C2

<220>

<221> misc_feature

<223> primer sequence

<400> 15

aaaatcgatc atcatcatca tcattcatatg gtgagcaagg gcgagg

46

<210> 16

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Reverse primer amplifying GFP from pEGFP-C2

<220>

<221> misc_feature

<223> primer sequence

<400> 16

aaaagcggcc gcctacttgt acagctcgtc catg

34

<210> 17
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Forward primer

<220>
 <221> misc_feature
 <223> primer sequence

<400> 17
 cagagaccaa gcagctcact agc 23

<210> 18
 <211> 40
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Reverse primer

<220>
 <221> misc_feature
 <223> primer sequence

<400> 18
 aaagcggccg catcgattat cagtcattgt gaaccttgac 40

<210> 19
 <211> 5298
 <212> DNA
 <213> Rattus norvegicus

<220>
 <221> CDS
 <222> (1) .. (5298)
 <223> Corresponds to ORF of Seq ID No. 1 with silent C>T at nt 1264 and
 T>C at nt 4056

<400> 19
 atg gag gag agg tac tac ccg gtg atc ttc ccg gac gag cgg aat ttc 48
 Met Glu Glu Arg Tyr Tyr Pro Val Ile Phe Pro Asp Glu Arg Asn Phe
 1 5 10 15

cgc ccc ttc act tcc gac tct ctg gct gcc ata gag aag cgg att gct 96
 Arg Pro Phe Thr Ser Asp Ser Leu Ala Ala Ile Glu Lys Arg Ile Ala
 20 25 30

atc caa aag gag agg aag aag tcc aaa gac aag gcg gca gct gag ccc 144
 Ile Gln Lys Glu Arg Lys Lys Ser Lys Asp Lys Ala Ala Ala Glu Pro
 35 40 45

cag cct cgg cct cag ctt gac cta aag gcc tcc agg aag tta cct aag 192

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Pro | Arg | Pro | Gln | Leu | Asp | Leu | Lys | Ala | Ser | Arg | Lys | Leu | Pro | Lys | |
| 50 | | | | | | 55 | | | | | 60 | | | | | |
| ctt | tat | ggt | gac | att | ccc | cct | gag | ctt | gta | gcg | aag | cct | ctg | gaa | gac | 240 |
| Leu | Tyr | Gly | Asp | Ile | Pro | Pro | Glu | Leu | Val | Ala | Lys | Pro | Leu | Glu | Asp | |
| 65 | | | | | 70 | | | | 75 | | | | | 80 | | |
| ctg | gac | cca | ttc | tac | aaa | gac | cat | aag | aca | ttc | atg | gtg | ttg | aac | aag | 288 |
| Leu | Asp | Pro | Phe | Tyr | Lys | Asp | His | Lys | Thr | Phe | Met | Val | Leu | Asn | Lys | |
| | | | | 85 | | | | | 90 | | | | | 95 | | |
| aag | aga | aca | att | tat | cgc | ttc | agc | gcc | aag | cgg | gcc | ttg | ttc | att | ctg | 336 |
| Lys | Arg | Thr | Ile | Tyr | Arg | Phe | Ser | Ala | Lys | Arg | Ala | Leu | Phe | Ile | Leu | |
| | | | 100 | | | | | 105 | | | | | 110 | | | |
| ggg | cct | ttt | aat | ccc | ctc | aga | agc | tta | atg | att | cgt | atc | tct | gtc | cat | 384 |
| Gly | Pro | Phe | Asn | Pro | Leu | Arg | Ser | Leu | Met | Ile | Arg | Ile | Ser | Val | His | |
| | | 115 | | | | | 120 | | | | | 125 | | | | |
| tca | gtc | ttt | agc | atg | ttc | atc | atc | tgc | acg | gtg | atc | atc | aac | tgt | atg | 432 |
| Ser | Val | Phe | Ser | Met | Phe | Ile | Ile | Cys | Thr | Val | Ile | Ile | Asn | Cys | Met | |
| | 130 | | | | | 135 | | | | | 140 | | | | | |
| ttc | atg | gcg | aat | tct | atg | gag | aga | agt | ttc | gac | aac | gac | att | ccc | gaa | 480 |
| Phe | Met | Ala | Asn | Ser | Met | Glu | Arg | Ser | Phe | Asp | Asn | Asp | Ile | Pro | Glu | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | |
| tac | gtc | ttc | att | ggg | att | tat | att | tta | gaa | gct | gtg | att | aaa | ata | ttg | 528 |
| Tyr | Val | Phe | Ile | Gly | Ile | Tyr | Ile | Leu | Glu | Ala | Val | Ile | Lys | Ile | Leu | |
| | | | | 165 | | | | | 170 | | | | | 175 | | |
| gca | aga | ggc | ttc | att | gtg | gat | gag | ttt | tcc | ttc | ctc | cga | gat | ccg | tgg | 576 |
| Ala | Arg | Gly | Phe | Ile | Val | Asp | Glu | Phe | Ser | Phe | Leu | Arg | Asp | Pro | Trp | |
| | | | 180 | | | | | 185 | | | | | 190 | | | |
| aac | tgg | ctg | gac | ttc | att | gtc | att | gga | aca | gcg | atc | gca | act | tgt | ttt | 624 |
| Asn | Trp | Leu | Asp | Phe | Ile | Val | Ile | Gly | Thr | Ala | Ile | Ala | Thr | Cys | Phe | |
| | | 195 | | | | | 200 | | | | | 205 | | | | |
| ccg | ggc | agc | caa | gtc | aat | ctt | tca | gct | ctt | cgt | acc | ttc | cga | gtg | ttc | 672 |
| Pro | Gly | Ser | Gln | Val | Asn | Leu | Ser | Ala | Leu | Arg | Thr | Phe | Arg | Val | Phe | |
| | 210 | | | | | 215 | | | | | 220 | | | | | |
| aga | gct | ctg | aag | gcg | att | tca | gtt | atc | tca | ggg | ctg | aag | gtc | atc | gta | 720 |
| Arg | Ala | Leu | Lys | Ala | Ile | Ser | Val | Ile | Ser | Gly | Leu | Lys | Val | Ile | Val | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | |
| ggg | gcc | ctg | ctg | cg | tcg | gtg | aag | aag | ctg | gta | gac | gtg | atg | gtc | ctc | 768 |
| Gly | Ala | Leu | Leu | Arg | Ser | Val | Lys | Lys | Leu | Val | Asp | Val | Met | Val | Leu | |
| | | | | 245 | | | | | 250 | | | | | 255 | | |
| act | ctc | ttc | tgc | ctc | agc | atc | ttt | gcc | ctg | gtc | ggg | cag | cag | ctg | ttc | 816 |
| Thr | Leu | Phe | Cys | Leu | Ser | Ile | Phe | Ala | Leu | Val | Gly | Gln | Gln | Leu | Phe | |
| | | | 260 | | | | | 265 | | | | | 270 | | | |
| atg | gga | att | ctg | aac | cag | aag | tgt | att | aag | cac | aac | tgt | ggc | ccc | aac | 864 |
| Met | Gly | Ile | Leu | Asn | Gln | Lys | Cys | Ile | Lys | His | Asn | Cys | Gly | Pro | Asn | |
| | | 275 | | | | | 280 | | | | | 285 | | | | |
| cct | gca | tcc | aac | aag | gat | tgc | ttt | gaa | aag | gaa | aaa | gat | agc | gaa | gac | 912 |
| Pro | Ala | Ser | Asn | Lys | Asp | Cys | Phe | Glu | Lys | Glu | Lys | Asp | Ser | Glu | Asp | |

| 290 | | | | 295 | | | | 300 | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| ttc | ata | atg | tgt | ggt | acc | tgg | ctc | ggc | agc | aga | ccc | tgt | ccc | aat | ggt | 960 |
| Phe | Ile | Met | Cys | Gly | Thr | Trp | Leu | Gly | Ser | Arg | Pro | Cys | Pro | Asn | Gly | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| tct | acg | tgc | gat | aaa | acc | aca | ttg | aac | cca | gac | aat | aat | tat | aca | aag | 1008 |
| Ser | Thr | Cys | Asp | Lys | Thr | Thr | Leu | Asn | Pro | Asp | Asn | Asn | Tyr | Thr | Lys | |
| | | | | 325 | | | | | 330 | | | | | 335 | | |
| ttt | gac | aac | ttt | ggc | tgg | tcc | ttt | ctc | gcc | atg | ttc | cgg | gtt | atg | act | 1056 |
| Phe | Asp | Asn | Phe | Gly | Trp | Ser | Phe | Leu | Ala | Met | Phe | Arg | Val | Met | Thr | |
| | | | 340 | | | | | 345 | | | | | 350 | | | |
| caa | gac | tcc | tgg | gag | agg | ctt | tac | cga | cag | atc | ctg | cgg | acc | tct | ggg | 1104 |
| Gln | Asp | Ser | Trp | Glu | Arg | Leu | Tyr | Arg | Gln | Ile | Leu | Arg | Thr | Ser | Gly | |
| | | 355 | | | | | 360 | | | | | 365 | | | | |
| atc | tac | ttt | gtc | ttc | ttc | ttc | gtg | gtg | gtc | atc | ttc | ctg | ggc | tcc | ttc | 1152 |
| Ile | Tyr | Phe | Val | Phe | Phe | Phe | Val | Val | Val | Ile | Phe | Leu | Gly | Ser | Phe | |
| | 370 | | | | | 375 | | | | | 380 | | | | | |
| tac | ctg | ctt | aac | cta | acc | ctg | gct | gtt | gtc | acc | atg | gct | tat | gaa | gaa | 1200 |
| Tyr | Leu | Leu | Asn | Leu | Thr | Leu | Ala | Val | Val | Thr | Met | Ala | Tyr | Glu | Glu | |
| 385 | | | | | 390 | | | | | 395 | | | | 400 | | |
| cag | aac | aga | aat | gta | gct | gct | gag | aca | gag | gcc | aag | gag | aaa | atg | ttt | 1248 |
| Gln | Asn | Arg | Asn | Val | Ala | Ala | Glu | Thr | Glu | Ala | Lys | Glu | Lys | Met | Phe | |
| | | | | 405 | | | | | 410 | | | | | 415 | | |
| cag | gaa | gcc | cag | cag | ttg | tta | agg | gag | gag | aag | gag | gct | ctg | gtt | gcc | 1296 |
| Gln | Glu | Ala | Gln | Gln | Leu | Leu | Arg | Glu | Glu | Lys | Glu | Ala | Leu | Val | Ala | |
| | | | 420 | | | | | 425 | | | | | 430 | | | |
| atg | gga | att | gac | aga | agt | tcc | ctt | aat | tcc | ctt | caa | gct | tca | tcc | ttt | 1344 |
| Met | Gly | Ile | Asp | Arg | Ser | Ser | Leu | Asn | Ser | Leu | Gln | Ala | Ser | Ser | Phe | |
| | | 435 | | | | 440 | | | | | | 445 | | | | |
| tcc | ccg | aag | aag | agg | aag | ttt | ttc | ggg | agt | aag | aca | aga | aag | tcc | ttc | 1392 |
| Ser | Pro | Lys | Lys | Arg | Lys | Phe | Phe | Gly | Ser | Lys | Thr | Arg | Lys | Ser | Phe | |
| | 450 | | | | | 455 | | | | | 460 | | | | | |
| ttt | atg | aga | ggg | tcc | aag | acg | gcc | caa | gcc | tca | gcg | tct | gat | tca | gag | 1440 |
| Phe | Met | Arg | Gly | Ser | Lys | Thr | Ala | Gln | Ala | Ser | Ala | Ser | Asp | Ser | Glu | |
| 465 | | | | | 470 | | | | 475 | | | | | | 480 | |
| gac | gat | gcc | tct | aaa | aat | cca | cag | ctc | ctt | gag | cag | acc | aaa | cga | ctg | 1488 |
| Asp | Asp | Ala | Ser | Lys | Asn | Pro | Gln | Leu | Leu | Glu | Gln | Thr | Lys | Arg | Leu | |
| | | | | 485 | | | | | 490 | | | | | 495 | | |
| tcc | cag | aac | ttg | cca | gtg | gat | ctc | ttt | gat | gag | cac | gtg | gac | ccc | ctc | 1536 |
| Ser | Gln | Asn | Leu | Pro | Val | Asp | Leu | Phe | Asp | Glu | His | Val | Asp | Pro | Leu | |
| | | | 500 | | | | | 505 | | | | | 510 | | | |
| cac | agg | cag | aga | gcg | ctg | agc | gct | gtc | agt | atc | tta | acc | atc | acc | atg | 1584 |
| His | Arg | Gln | Arg | Ala | Leu | Ser | Ala | Val | Ser | Ile | Leu | Thr | Ile | Thr | Met | |
| | | 515 | | | | | 520 | | | | | 525 | | | | |
| cag | gaa | caa | gaa | aaa | ttc | cag | gag | cct | tgt | ttc | cca | tgt | ggg | aaa | aat | 1632 |
| Gln | Glu | Gln | Glu | Lys | Phe | Gln | Glu | Pro | Cys | Phe | Pro | Cys | Gly | Lys | Asn | |
| | 530 | | | | | 535 | | | | | 540 | | | | | |

| | |
|---|------|
| ttg gcc tct aag tac ctg gtg tgg gac tgt agc cct cag tgg ctg tgc | 1680 |
| Leu Ala Ser Lys Tyr Leu Val Trp Asp Cys Ser Pro Gln Trp Leu Cys | |
| 545 550 555 560 | |
| ata aag aag gtc ctg cgg acc atc atg acg gat ccc ttt act gag ctg | 1728 |
| Ile Lys Lys Val Leu Arg Thr Ile Met Thr Asp Pro Phe Thr Glu Leu | |
| 565 570 575 | |
| gcc atc acc atc tgc atc atc atc aat acc gtt ttc tta gcc gtg gag | 1776 |
| Ala Ile Thr Ile Cys Ile Ile Ile Asn Thr Val Phe Leu Ala Val Glu | |
| 580 585 590 | |
| cac cac aac atg gat gac aac tta aag acc ata ctg aaa ata gga aac | 1824 |
| His His Asn Met Asp Asp Asn Leu Lys Thr Ile Leu Lys Ile Gly Asn | |
| 595 600 605 | |
| tgg gtt ttc acg gga att ttc ata gcg gaa atg tgt ctc aag atc atc | 1872 |
| Trp Val Phe Thr Gly Ile Phe Ile Ala Glu Met Cys Leu Lys Ile Ile | |
| 610 615 620 | |
| gcg ctc gac cct tac cac tac ttc cgg cac ggc tgg aat gtt ttt gac | 1920 |
| Ala Leu Asp Pro Tyr His Tyr Phe Arg His Gly Trp Asn Val Phe Asp | |
| 625 630 635 640 | |
| agc atc gtg gcc ctc ctg agt ctc gct gat gtg ctc tac aac aca ctg | 1968 |
| Ser Ile Val Ala Leu Leu Ser Leu Ala Asp Val Leu Tyr Asn Thr Leu | |
| 645 650 655 | |
| tct gat aac aat agg tct ttc ttg gct tcc ctc aga gtg ctg agg gtc | 2016 |
| Ser Asp Asn Asn Arg Ser Phe Leu Ala Ser Leu Arg Val Leu Arg Val | |
| 660 665 670 | |
| ttc aag tta gcc aaa tcc tgg ccc acg tta aac act ctc att aag atc | 2064 |
| Phe Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Thr Leu Ile Lys Ile | |
| 675 680 685 | |
| atc ggc cac tcc gtg ggc gcg ctt gga aac ctg act gtg gtc ctg act | 2112 |
| Ile Gly His Ser Val Gly Ala Leu Gly Asn Leu Thr Val Val Leu Thr | |
| 690 695 700 | |
| atc gtg gtc ttc atc ttt tct gtg gtg ggc atg cgg ctc ttc ggc acc | 2160 |
| Ile Val Val Phe Ile Phe Ser Val Val Gly Met Arg Leu Phe Gly Thr | |
| 705 710 715 720 | |
| aag ttt aac aag acc gcc tac gcc acc cag gag cgg ccc agg cgg cgc | 2208 |
| Lys Phe Asn Lys Thr Ala Tyr Ala Thr Gln Glu Arg Pro Arg Arg Arg | |
| 725 730 735 | |
| tgg cac atg gat aat ttc tac cac tcc ttc ctg gtg gtg ttc cgc atc | 2256 |
| Trp His Met Asp Asn Phe Tyr His Ser Phe Leu Val Val Phe Arg Ile | |
| 740 745 750 | |
| ctc tgt ggg gaa tgg atc gag aac atg tgg ggc tgc atg cag gat atg | 2304 |
| Leu Cys Gly Glu Trp Ile Glu Asn Met Trp Gly Cys Met Gln Asp Met | |
| 755 760 765 | |
| gac ggc tcc ccg ttg tgc atc att gtc ttt gtc ctg ata atg gtg atc | 2352 |
| Asp Gly Ser Pro Leu Cys Ile Ile Val Phe Val Leu Ile Met Val Ile | |
| 770 775 780 | |

| | |
|---|------|
| ggg aag ctt gtg gtg ctt aac ctc ttc att gcc ttg ctg ctc aat tcc | 2400 |
| Gly Lys Leu Val Val Leu Asn Leu Phe Ile Ala Leu Leu Leu Asn Ser | |
| 785 790 795 800 | |
| ttc agc aat gag gag aag gat ggg agc ctg gaa gga gag acc agg aaa | 2448 |
| Phe Ser Asn Glu Glu Lys Asp Gly Ser Leu Glu Gly Glu Thr Arg Lys | |
| 805 810 815 | |
| acc aaa gtg cag cta gcc ctg gat cgg ttc cgc cgg gcc ttc tcc ttc | 2496 |
| Thr Lys Val Gln Leu Ala Leu Asp Arg Phe Arg Arg Ala Phe Ser Phe | |
| 820 825 830 | |
| atg ctg cac gct ctt cag agt ttt tgt tgc aag aaa tgc agg agg aaa | 2544 |
| Met Leu His Ala Leu Gln Ser Phe Cys Cys Lys Lys Cys Arg Arg Lys | |
| 835 840 845 | |
| aac tcg cca aag cca aaa gag aca aca gaa agc ttt gct ggt gag aat | 2592 |
| Asn Ser Pro Lys Pro Lys Glu Thr Thr Glu Ser Phe Ala Gly Glu Asn | |
| 850 855 860 | |
| aaa gac tca atc ctc ccg gat gcg agg ccc tgg aag gag tat gat aca | 2640 |
| Lys Asp Ser Ile Leu Pro Asp Ala Arg Pro Trp Lys Glu Tyr Asp Thr | |
| 865 870 875 880 | |
| gac atg gct ttg tac act gga cag gcc ggg gct ccg ctg gcc cca ctc | 2688 |
| Asp Met Ala Leu Tyr Thr Gly Gln Ala Gly Ala Pro Leu Ala Pro Leu | |
| 885 890 895 | |
| gca gag gta gag gac gat gtg gaa tat tgt ggt gaa ggc ggt gcc cta | 2736 |
| Ala Glu Val Glu Asp Asp Val Glu Tyr Cys Gly Glu Gly Gly Ala Leu | |
| 900 905 910 | |
| ccc acc tca caa cat agt gct gga gtt cag gcc ggt gac ctc cct cca | 2784 |
| Pro Thr Ser Gln His Ser Ala Gly Val Gln Ala Gly Asp Leu Pro Pro | |
| 915 920 925 | |
| gag acc aag cag ctc act agc ccg gat gac caa ggg gtt gaa atg gaa | 2832 |
| Glu Thr Lys Gln Leu Thr Ser Pro Asp Asp Gln Gly Val Glu Met Glu | |
| 930 935 940 | |
| gta ttt tct gaa gaa gat ctg cat tta agc ata cag agt cct cga aag | 2880 |
| Val Phe Ser Glu Glu Asp Leu His Leu Ser Ile Gln Ser Pro Arg Lys | |
| 945 950 955 960 | |
| aag tct gac gca gtg agc atg ctc tcg gaa tgc agc aca att gac ctg | 2928 |
| Lys Ser Asp Ala Val Ser Met Leu Ser Glu Cys Ser Thr Ile Asp Leu | |
| 965 970 975 | |
| aat gat atc ttt aga aat tta cag aaa aca gtt tcc ccc aaa aag cag | 2976 |
| Asn Asp Ile Phe Arg Asn Leu Gln Lys Thr Val Ser Pro Lys Lys Gln | |
| 980 985 990 | |
| cca gat aga tgc ttt ccc aag ggc ctt agt tgt cac ttt cta tgc cac | 3024 |
| Pro Asp Arg Cys Phe Pro Lys Gly Leu Ser Cys His Phe Leu Cys His | |
| 995 1000 1005 | |
| aaa aca gac aag aga aag tcc ccc tgg gtc ctg tgg tgg aac att | 3069 |
| Lys Thr Asp Lys Arg Lys Ser Pro Trp Val Leu Trp Trp Asn Ile | |
| 1010 1015 1020 | |
| cgg aaa acc tgc tac caa atc gtg aag cac agc tgg ttt gag agt | 3114 |

| | | | | | | | | | | | | | | | |
|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|------|
| Arg | Lys | Thr | Cys | Tyr | Gln | Ile | Val | Lys | His | Ser | Trp | Phe | Glu | Ser | |
| | 1025 | | | | | 1030 | | | | | 1035 | | | | |
| ttc | ata | atc | ttt | gtt | att | ctg | ctg | agc | agt | gga | gcg | ctg | ata | ttt | 3159 |
| Phe | Ile | Ile | Phe | Val | Ile | Leu | Leu | Ser | Ser | Gly | Ala | Leu | Ile | Phe | |
| | 1040 | | | | | 1045 | | | | | 1050 | | | | |
| gaa | gat | gtc | aat | ctc | ccc | agc | cgg | ccc | caa | gtt | gag | aaa | tta | cta | 3204 |
| Glu | Asp | Val | Asn | Leu | Pro | Ser | Arg | Pro | Gln | Val | Glu | Lys | Leu | Leu | |
| | 1055 | | | | | 1060 | | | | | 1065 | | | | |
| agg | tgt | acc | gat | aat | att | ttc | aca | ttt | att | ttc | ctc | ctg | gaa | atg | 3249 |
| Arg | Cys | Thr | Asp | Asn | Ile | Phe | Thr | Phe | Ile | Phe | Leu | Leu | Glu | Met | |
| | 1070 | | | | | 1075 | | | | | 1080 | | | | |
| atc | ctg | aag | tgg | gtg | gcc | ttt | gga | ttc | cgg | agg | tat | ttc | acc | agt | 3294 |
| Ile | Leu | Lys | Trp | Val | Ala | Phe | Gly | Phe | Arg | Arg | Tyr | Phe | Thr | Ser | |
| | 1085 | | | | | 1090 | | | | | 1095 | | | | |
| gcc | tgg | tgc | tgg | ctt | gat | ttc | ctc | att | gtg | gtg | gtg | tct | gtg | ctc | 3339 |
| Ala | Trp | Cys | Trp | Leu | Asp | Phe | Leu | Ile | Val | Val | Val | Ser | Val | Leu | |
| | 1100 | | | | | 1105 | | | | | 1110 | | | | |
| agt | ctc | atg | aat | cta | cca | agc | ttg | aag | tcc | ttc | cgg | act | ctg | cgg | 3384 |
| Ser | Leu | Met | Asn | Leu | Pro | Ser | Leu | Lys | Ser | Phe | Arg | Thr | Leu | Arg | |
| | 1115 | | | | | 1120 | | | | | 1125 | | | | |
| gcc | ctg | aga | cct | ctg | cgg | gcg | ctg | tcc | cag | ttt | gaa | gga | atg | aag | 3429 |
| Ala | Leu | Arg | Pro | Leu | Arg | Ala | Leu | Ser | Gln | Phe | Glu | Gly | Met | Lys | |
| | 1130 | | | | | 1135 | | | | | 1140 | | | | |
| gtt | gtc | gtc | tac | gcc | ctg | atc | agc | gcc | ata | cct | gcc | att | ctc | aat | 3474 |
| Val | Val | Val | Tyr | Ala | Leu | Ile | Ser | Ala | Ile | Pro | Ala | Ile | Leu | Asn | |
| | 1145 | | | | | 1150 | | | | | 1155 | | | | |
| gtc | ttg | ctg | gtc | tgc | ctc | att | ttc | tgg | ctc | gta | ttt | tgt | atc | ttg | 3519 |
| Val | Leu | Leu | Val | Cys | Leu | Ile | Phe | Trp | Leu | Val | Phe | Cys | Ile | Leu | |
| | 1160 | | | | | 1165 | | | | | 1170 | | | | |
| gga | gta | aat | tta | ttt | tct | ggg | aag | ttt | gga | agg | tgc | att | aac | ggg | 3564 |
| Gly | Val | Asn | Leu | Phe | Ser | Gly | Lys | Phe | Gly | Arg | Cys | Ile | Asn | Gly | |
| | 1175 | | | | | 1180 | | | | | 1185 | | | | |
| aca | gac | ata | aat | atg | tat | ttg | gat | ttt | acc | gaa | gtt | ccg | aac | cga | 3609 |
| Thr | Asp | Ile | Asn | Met | Tyr | Leu | Asp | Phe | Thr | Glu | Val | Pro | Asn | Arg | |
| | 1190 | | | | | 1195 | | | | | 1200 | | | | |
| agc | caa | tgt | aac | att | agt | aat | tac | tcg | tgg | aag | gtc | ccg | cag | gtc | 3654 |
| Ser | Gln | Cys | Asn | Ile | Ser | Asn | Tyr | Ser | Trp | Lys | Val | Pro | Gln | Val | |
| | 1205 | | | | | 1210 | | | | | 1215 | | | | |
| aac | ttt | gac | aac | gtg | ggg | aat | gcc | tat | ctc | gcc | ctg | ctg | caa | gtg | 3699 |
| Asn | Phe | Asp | Asn | Val | Gly | Asn | Ala | Tyr | Leu | Ala | Leu | Leu | Gln | Val | |
| | 1220 | | | | | 1225 | | | | | 1230 | | | | |
| gca | acc | tat | aag | ggc | tgg | ctg | gaa | atc | atg | aat | gct | gct | gtc | gat | 3744 |
| Ala | Thr | Tyr | Lys | Gly | Trp | Leu | Glu | Ile | Met | Asn | Ala | Ala | Val | Asp | |
| | 1235 | | | | | 1240 | | | | | 1245 | | | | |
| tcc | aga | gag | aaa | gac | gag | cag | ccg | gac | ttt | gag | gcg | aac | ctc | tac | 3789 |
| Ser | Arg | Glu | Lys | Asp | Glu | Gln | Pro | Asp | Phe | Glu | Ala | Asn | Leu | Tyr | |

| 1250 | 1255 | 1260 | |
|---|------|------|------|
| gcg tat ctc tac ttt gtg gtt ttt atc atc ttc ggc tcc ttc ttt | | | 3834 |
| Ala Tyr Leu Tyr Phe Val Val Phe Ile Ile Phe Gly Ser Phe Phe | | | |
| 1265 | 1270 | 1275 | |
| acc ctg aac ctc ttt atc ggt gtt att att gac aac ttc aat cag | | | 3879 |
| Thr Leu Asn Leu Phe Ile Gly Val Ile Ile Asp Asn Phe Asn Gln | | | |
| 1280 | 1285 | 1290 | |
| cag cag aaa aag tta ggt ggc caa gac att ttt atg aca gaa gaa | | | 3924 |
| Gln Gln Lys Lys Leu Gly Gly Gln Asp Ile Phe Met Thr Glu Glu | | | |
| 1295 | 1300 | 1305 | |
| cag aag aaa tat tac aat gca atg aaa aag tta gga acc aag aaa | | | 3969 |
| Gln Lys Lys Tyr Tyr Asn Ala Met Lys Lys Leu Gly Thr Lys Lys | | | |
| 1310 | 1315 | 1320 | |
| cct caa aag ccc atc cca agg ccc ctg aac aaa tgt caa gcc ttt | | | 4014 |
| Pro Gln Lys Pro Ile Pro Arg Pro Leu Asn Lys Cys Gln Ala Phe | | | |
| 1325 | 1330 | 1335 | |
| gtg ttc gac ctg gtc aca agc cag gtc ttt gac gtc atc atc ctg | | | 4059 |
| Val Phe Asp Leu Val Thr Ser Gln Val Phe Asp Val Ile Ile Leu | | | |
| 1340 | 1345 | 1350 | |
| ggt ctt att gtc tta aat atg att atc atg atg gct gaa tct gcc | | | 4104 |
| Gly Leu Ile Val Leu Asn Met Ile Ile Met Met Ala Glu Ser Ala | | | |
| 1355 | 1360 | 1365 | |
| gac cag ccc aaa gat gtg aag aaa acc ttt gat atc ctc aac ata | | | 4149 |
| Asp Gln Pro Lys Asp Val Lys Lys Thr Phe Asp Ile Leu Asn Ile | | | |
| 1370 | 1375 | 1380 | |
| gcc ttc gtg gtc atc ttt acc ata gag tgt ctc atc aaa gtc ttt | | | 4194 |
| Ala Phe Val Val Ile Phe Thr Ile Glu Cys Leu Ile Lys Val Phe | | | |
| 1385 | 1390 | 1395 | |
| gct ttg agg caa cac tac ttc acc aat ggc tgg aac tta ttt gat | | | 4239 |
| Ala Leu Arg Gln His Tyr Phe Thr Asn Gly Trp Asn Leu Phe Asp | | | |
| 1400 | 1405 | 1410 | |
| tgt gtg gtc gtg gtt ctt tct atc att agt acc ctg gtt tcc cgc | | | 4284 |
| Cys Val Val Val Val Leu Ser Ile Ile Ser Thr Leu Val Ser Arg | | | |
| 1415 | 1420 | 1425 | |
| ttg gag gac agt gac att tct ttc ccg ccc acg ctc ttc aga gtc | | | 4329 |
| Leu Glu Asp Ser Asp Ile Ser Phe Pro Pro Thr Leu Phe Arg Val | | | |
| 1430 | 1435 | 1440 | |
| gtc cgc ttg gct cgg att ggt cga atc ctc agg ctg gtc cgg gct | | | 4374 |
| Val Arg Leu Ala Arg Ile Gly Arg Ile Leu Arg Leu Val Arg Ala | | | |
| 1445 | 1450 | 1455 | |
| gcc cgg gga atc agg acc ctc ctc ttt gct ttg atg atg tct ctc | | | 4419 |
| Ala Arg Gly Ile Arg Thr Leu Leu Phe Ala Leu Met Met Ser Leu | | | |
| 1460 | 1465 | 1470 | |
| ccc tct ctc ttc aac atc ggt ctg ctg ctc ttc ctg gtg atg ttc | | | 4464 |
| Pro Ser Leu Phe Asn Ile Gly Leu Leu Leu Phe Leu Val Met Phe | | | |
| 1475 | 1480 | 1485 | |

| | |
|---|------|
| att tac gcc atc ttt ggg atg agc tgg ttt tcc aaa gtg aag aag | 4509 |
| Ile Tyr Ala Ile Phe Gly Met Ser Trp Phe Ser Lys Val Lys Lys | |
| 1490 1495 1500 | |
| ggc tcc ggg atc gac gac atc ttc aac ttc gag acc ttt acg ggc | 4554 |
| Gly Ser Gly Ile Asp Asp Ile Phe Asn Phe Glu Thr Phe Thr Gly | |
| 1505 1510 1515 | |
| agc atg ctg tgc ctc ttc cag ata acc act tcg gct ggc tgg gat | 4599 |
| Ser Met Leu Cys Leu Phe Gln Ile Thr Thr Ser Ala Gly Trp Asp | |
| 1520 1525 1530 | |
| acc ctc ctc aac ccc atg ctg gag gca aaa gaa cac tgc aac tcc | 4644 |
| Thr Leu Leu Asn Pro Met Leu Glu Ala Lys Glu His Cys Asn Ser | |
| 1535 1540 1545 | |
| tcc tcc caa gac agc tgt cag cag ccg cag ata gcc gtc gtc tac | 4689 |
| Ser Ser Gln Asp Ser Cys Gln Gln Pro Gln Ile Ala Val Val Tyr | |
| 1550 1555 1560 | |
| ttc gtc agt tac atc atc atc tcc ttc ctc atc gtg gtc aac atg | 4734 |
| Phe Val Ser Tyr Ile Ile Ile Ser Phe Leu Ile Val Val Asn Met | |
| 1565 1570 1575 | |
| tac atc gct gtg atc ctc gag aac ttc aac aca gcc acg gag gag | 4779 |
| Tyr Ile Ala Val Ile Leu Glu Asn Phe Asn Thr Ala Thr Glu Glu | |
| 1580 1585 1590 | |
| agc gag gac cct ctg gga gag gac gag ttt gaa atc ttc tat gag | 4824 |
| Ser Glu Asp Pro Leu Gly Glu Asp Asp Phe Glu Ile Phe Tyr Glu | |
| 1595 1600 1605 | |
| gtc tgg gag aag ttt gac ccc gag gcg tcg cag ttc atc cag tat | 4869 |
| Val Trp Glu Lys Phe Asp Pro Glu Ala Ser Gln Phe Ile Gln Tyr | |
| 1610 1615 1620 | |
| tcg gcc ctc tct gac ttt gcg gac gcc ctg ccg gag ccg ttg cgt | 4914 |
| Ser Ala Leu Ser Asp Phe Ala Asp Ala Leu Pro Glu Pro Leu Arg | |
| 1625 1630 1635 | |
| gtg gcc aag ccg aat aag ttt cag ttt cta gtg atg gac ttg ccc | 4959 |
| Val Ala Lys Pro Asn Lys Phe Gln Phe Leu Val Met Asp Leu Pro | |
| 1640 1645 1650 | |
| atg gtg atg ggc gac cgc ctc cat tgc atg gat gtt ctc ttt gct | 5004 |
| Met Val Met Gly Asp Arg Leu His Cys Met Asp Val Leu Phe Ala | |
| 1655 1660 1665 | |
| ttc act acc agg gtc ctc ggg gac tcc agc ggc ttg gat acc atg | 5049 |
| Phe Thr Thr Arg Val Leu Gly Asp Ser Ser Gly Leu Asp Thr Met | |
| 1670 1675 1680 | |
| aaa acc atg atg gag gag aag ttt atg gag gcc aac cct ttt aag | 5094 |
| Lys Thr Met Met Glu Glu Lys Phe Met Glu Ala Asn Pro Phe Lys | |
| 1685 1690 1695 | |
| aag ctc tac gag ccc ata gtc acc acc acc aag agg aag gag gag | 5139 |
| Lys Leu Tyr Glu Pro Ile Val Thr Thr Thr Lys Arg Lys Glu Glu | |
| 1700 1705 1710 | |

gag caa ggc gcc gcc gtc atc cag agg gcc tac cgg aaa cac atg 5184
 Glu Gln Gly Ala Ala Val Ile Gln Arg Ala Tyr Arg Lys His Met
 1715 1720 1725

gag aag atg gtc aaa ctg agg ctg aag gac agg tca agt tca tcg 5229
 Glu Lys Met Val Lys Leu Arg Leu Lys Asp Arg Ser Ser Ser Ser
 1730 1735 1740

cac cag gtg ttt tgc aat gga gac ttg tcc agc ttg gat gtg gcc 5274
 His Gln Val Phe Cys Asn Gly Asp Leu Ser Ser Leu Asp Val Ala
 1745 1750 1755

aag gtc aag gtt cac aat gac tga 5298
 Lys Val Lys Val His Asn Asp
 1760 1765

<210> 20
 <211> 1765
 <212> PRT
 <213> Rattus norvegicus

<400> 20

Met Glu Glu Arg Tyr Tyr Pro Val Ile Phe Pro Asp Glu Arg Asn Phe
 1 5 10 15

Arg Pro Phe Thr Ser Asp Ser Leu Ala Ala Ile Glu Lys Arg Ile Ala
 20 25 30

Ile Gln Lys Glu Arg Lys Lys Ser Lys Asp Lys Ala Ala Ala Glu Pro
 35 40 45

Gln Pro Arg Pro Gln Leu Asp Leu Lys Ala Ser Arg Lys Leu Pro Lys
 50 55 60

Leu Tyr Gly Asp Ile Pro Pro Glu Leu Val Ala Lys Pro Leu Glu Asp
 65 70 75 80

Leu Asp Pro Phe Tyr Lys Asp His Lys Thr Phe Met Val Leu Asn Lys
 85 90 95

Lys Arg Thr Ile Tyr Arg Phe Ser Ala Lys Arg Ala Leu Phe Ile Leu
 100 105 110

Gly Pro Phe Asn Pro Leu Arg Ser Leu Met Ile Arg Ile Ser Val His
 115 120 125

Ser Val Phe Ser Met Phe Ile Ile Cys Thr Val Ile Ile Asn Cys Met
 130 135 140

Phe Met Ala Asn Ser Met Glu Arg Ser Phe Asp Asn Asp Ile Pro Glu

| | | | | | | |
|---|-----|-----|-----|-----|-----|-----|
| 145 | | 150 | | 155 | | 160 |
| Tyr Val Phe Ile Gly Ile Tyr Ile Leu Glu Ala Val Ile Lys Ile Leu | 165 | | 170 | | 175 | |
| Ala Arg Gly Phe Ile Val Asp Glu Phe Ser Phe Leu Arg Asp Pro Trp | 180 | | 185 | | 190 | |
| Asn Trp Leu Asp Phe Ile Val Ile Gly Thr Ala Ile Ala Thr Cys Phe | 195 | | 200 | | 205 | |
| Pro Gly Ser Gln Val Asn Leu Ser Ala Leu Arg Thr Phe Arg Val Phe | 210 | | 215 | | 220 | |
| Arg Ala Leu Lys Ala Ile Ser Val Ile Ser Gly Leu Lys Val Ile Val | 225 | | 230 | | 235 | 240 |
| Gly Ala Leu Leu Arg Ser Val Lys Lys Leu Val Asp Val Met Val Leu | 245 | | 250 | | 255 | |
| Thr Leu Phe Cys Leu Ser Ile Phe Ala Leu Val Gly Gln Gln Leu Phe | 260 | | 265 | | 270 | |
| Met Gly Ile Leu Asn Gln Lys Cys Ile Lys His Asn Cys Gly Pro Asn | 275 | | 280 | | 285 | |
| Pro Ala Ser Asn Lys Asp Cys Phe Glu Lys Glu Lys Asp Ser Glu Asp | 290 | | 295 | | 300 | |
| Phe Ile Met Cys Gly Thr Trp Leu Gly Ser Arg Pro Cys Pro Asn Gly | 305 | | 310 | | 315 | 320 |
| Ser Thr Cys Asp Lys Thr Thr Leu Asn Pro Asp Asn Asn Tyr Thr Lys | 325 | | 330 | | 335 | |
| Phe Asp Asn Phe Gly Trp Ser Phe Leu Ala Met Phe Arg Val Met Thr | 340 | | 345 | | 350 | |
| Gln Asp Ser Trp Glu Arg Leu Tyr Arg Gln Ile Leu Arg Thr Ser Gly | 355 | | 360 | | 365 | |
| Ile Tyr Phe Val Phe Phe Phe Val Val Val Ile Phe Leu Gly Ser Phe | 370 | | 375 | | 380 | |
| Tyr Leu Leu Asn Leu Thr Leu Ala Val Val Thr Met Ala Tyr Glu Glu | 385 | | 390 | | 395 | 400 |

Gln Asn Arg Asn Val Ala Ala Glu Thr Glu Ala Lys Glu Lys Met Phe
 405 410 415

Gln Glu Ala Gln Gln Leu Leu Arg Glu Glu Lys Glu Ala Leu Val Ala
 420 425 430

Met Gly Ile Asp Arg Ser Ser Leu Asn Ser Leu Gln Ala Ser Ser Phe
 435 440 445

Ser Pro Lys Lys Arg Lys Phe Phe Gly Ser Lys Thr Arg Lys Ser Phe
 450 455 460

Phe Met Arg Gly Ser Lys Thr Ala Gln Ala Ser Ala Ser Asp Ser Glu
 465 470 475 480

Asp Asp Ala Ser Lys Asn Pro Gln Leu Leu Glu Gln Thr Lys Arg Leu
 485 490 495

Ser Gln Asn Leu Pro Val Asp Leu Phe Asp Glu His Val Asp Pro Leu
 500 505 510

His Arg Gln Arg Ala Leu Ser Ala Val Ser Ile Leu Thr Ile Thr Met
 515 520 525

Gln Glu Gln Glu Lys Phe Gln Glu Pro Cys Phe Pro Cys Gly Lys Asn
 530 535 540

Leu Ala Ser Lys Tyr Leu Val Trp Asp Cys Ser Pro Gln Trp Leu Cys
 545 550 555 560

Ile Lys Lys Val Leu Arg Thr Ile Met Thr Asp Pro Phe Thr Glu Leu
 565 570 575

Ala Ile Thr Ile Cys Ile Ile Ile Asn Thr Val Phe Leu Ala Val Glu
 580 585 590

His His Asn Met Asp Asp Asn Leu Lys Thr Ile Leu Lys Ile Gly Asn
 595 600 605

Trp Val Phe Thr Gly Ile Phe Ile Ala Glu Met Cys Leu Lys Ile Ile
 610 615 620

Ala Leu Asp Pro Tyr His Tyr Phe Arg His Gly Trp Asn Val Phe Asp
 625 630 635 640

Ser Ile Val Ala Leu Leu Ser Leu Ala Asp Val Leu Tyr Asn Thr Leu
645 650 655

Ser Asp Asn Asn Arg Ser Phe Leu Ala Ser Leu Arg Val Leu Arg Val
660 665 670

Phe Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Thr Leu Ile Lys Ile
675 680 685

Ile Gly His Ser Val Gly Ala Leu Gly Asn Leu Thr Val Val Leu Thr
690 695 700

Ile Val Val Phe Ile Phe Ser Val Val Gly Met Arg Leu Phe Gly Thr
705 710 715 720

Lys Phe Asn Lys Thr Ala Tyr Ala Thr Gln Glu Arg Pro Arg Arg Arg
725 730 735

Trp His Met Asp Asn Phe Tyr His Ser Phe Leu Val Val Phe Arg Ile
740 745 750

Leu Cys Gly Glu Trp Ile Glu Asn Met Trp Gly Cys Met Gln Asp Met
755 760 765

Asp Gly Ser Pro Leu Cys Ile Ile Val Phe Val Leu Ile Met Val Ile
770 775 780

Gly Lys Leu Val Val Leu Asn Leu Phe Ile Ala Leu Leu Leu Asn Ser
785 790 795 800

Phe Ser Asn Glu Glu Lys Asp Gly Ser Leu Glu Gly Glu Thr Arg Lys
805 810 815

Thr Lys Val Gln Leu Ala Leu Asp Arg Phe Arg Arg Ala Phe Ser Phe
820 825 830

Met Leu His Ala Leu Gln Ser Phe Cys Cys Lys Lys Cys Arg Arg Lys
835 840 845

Asn Ser Pro Lys Pro Lys Glu Thr Thr Glu Ser Phe Ala Gly Glu Asn
850 855 860

Lys Asp Ser Ile Leu Pro Asp Ala Arg Pro Trp Lys Glu Tyr Asp Thr
865 870 875 880

Asp Met Ala Leu Tyr Thr Gly Gln Ala Gly Ala Pro Leu Ala Pro Leu
 885 890 895

Ala Glu Val Glu Asp Asp Val Glu Tyr Cys Gly Glu Gly Gly Ala Leu
 900 905 910

Pro Thr Ser Gln His Ser Ala Gly Val Gln Ala Gly Asp Leu Pro Pro
 915 920 925

Glu Thr Lys Gln Leu Thr Ser Pro Asp Asp Gln Gly Val Glu Met Glu
 930 935 940

Val Phe Ser Glu Glu Asp Leu His Leu Ser Ile Gln Ser Pro Arg Lys
 945 950 955 960

Lys Ser Asp Ala Val Ser Met Leu Ser Glu Cys Ser Thr Ile Asp Leu
 965 970 975

Asn Asp Ile Phe Arg Asn Leu Gln Lys Thr Val Ser Pro Lys Lys Gln
 980 985 990

Pro Asp Arg Cys Phe Pro Lys Gly Leu Ser Cys His Phe Leu Cys His
 995 1000 1005

Lys Thr Asp Lys Arg Lys Ser Pro Trp Val Leu Trp Trp Asn Ile
 1010 1015 1020

Arg Lys Thr Cys Tyr Gln Ile Val Lys His Ser Trp Phe Glu Ser
 1025 1030 1035

Phe Ile Ile Phe Val Ile Leu Leu Ser Ser Gly Ala Leu Ile Phe
 1040 1045 1050

Glu Asp Val Asn Leu Pro Ser Arg Pro Gln Val Glu Lys Leu Leu
 1055 1060 1065

Arg Cys Thr Asp Asn Ile Phe Thr Phe Ile Phe Leu Leu Glu Met
 1070 1075 1080

Ile Leu Lys Trp Val Ala Phe Gly Phe Arg Arg Tyr Phe Thr Ser
 1085 1090 1095

Ala Trp Cys Trp Leu Asp Phe Leu Ile Val Val Val Ser Val Leu
 1100 1105 1110

Ser Leu Met Asn Leu Pro Ser Leu Lys Ser Phe Arg Thr Leu Arg

| | | | | |
|-------------------------|---------------------|-----------------|--|------|
| 1115 | | 1120 | | 1125 |
| Ala Leu Arg Pro Leu Arg | Ala Leu Ser Gln Phe | Glu Gly Met Lys | | |
| 1130 | 1135 | 1140 | | |
| Val Val Val Tyr Ala Leu | Ile Ser Ala Ile Pro | Ala Ile Leu Asn | | |
| 1145 | 1150 | 1155 | | |
| Val Leu Leu Val Cys Leu | Ile Phe Trp Leu Val | Phe Cys Ile Leu | | |
| 1160 | 1165 | 1170 | | |
| Gly Val Asn Leu Phe Ser | Gly Lys Phe Gly Arg | Cys Ile Asn Gly | | |
| 1175 | 1180 | 1185 | | |
| Thr Asp Ile Asn Met Tyr | Leu Asp Phe Thr Glu | Val Pro Asn Arg | | |
| 1190 | 1195 | 1200 | | |
| Ser Gln Cys Asn Ile Ser | Asn Tyr Ser Trp Lys | Val Pro Gln Val | | |
| 1205 | 1210 | 1215 | | |
| Asn Phe Asp Asn Val Gly | Asn Ala Tyr Leu Ala | Leu Leu Gln Val | | |
| 1220 | 1225 | 1230 | | |
| Ala Thr Tyr Lys Gly Trp | Leu Glu Ile Met Asn | Ala Ala Val Asp | | |
| 1235 | 1240 | 1245 | | |
| Ser Arg Glu Lys Asp Glu | Gln Pro Asp Phe Glu | Ala Asn Leu Tyr | | |
| 1250 | 1255 | 1260 | | |
| Ala Tyr Leu Tyr Phe Val | Val Phe Ile Ile Phe | Gly Ser Phe Phe | | |
| 1265 | 1270 | 1275 | | |
| Thr Leu Asn Leu Phe Ile | Gly Val Ile Ile Asp | Asn Phe Asn Gln | | |
| 1280 | 1285 | 1290 | | |
| Gln Gln Lys Lys Leu Gly | Gly Gln Asp Ile Phe | Met Thr Glu Glu | | |
| 1295 | 1300 | 1305 | | |
| Gln Lys Lys Tyr Tyr Asn | Ala Met Lys Lys Leu | Gly Thr Lys Lys | | |
| 1310 | 1315 | 1320 | | |
| Pro Gln Lys Pro Ile Pro | Arg Pro Leu Asn Lys | Cys Gln Ala Phe | | |
| 1325 | 1330 | 1335 | | |
| Val Phe Asp Leu Val Thr | Ser Gln Val Phe Asp | Val Ile Ile Leu | | |
| 1340 | 1345 | 1350 | | |

Gly Leu Ile Val Leu Asn Met Ile Ile Met Met Ala Glu Ser Ala
1355 1360 1365

Asp Gln Pro Lys Asp Val Lys Lys Thr Phe Asp Ile Leu Asn Ile
1370 1375 1380

Ala Phe Val Val Ile Phe Thr Ile Glu Cys Leu Ile Lys Val Phe
1385 1390 1395

Ala Leu Arg Gln His Tyr Phe Thr Asn Gly Trp Asn Leu Phe Asp
1400 1405 1410

Cys Val Val Val Val Leu Ser Ile Ile Ser Thr Leu Val Ser Arg
1415 1420 1425

Leu Glu Asp Ser Asp Ile Ser Phe Pro Pro Thr Leu Phe Arg Val
1430 1435 1440

Val Arg Leu Ala Arg Ile Gly Arg Ile Leu Arg Leu Val Arg Ala
1445 1450 1455

Ala Arg Gly Ile Arg Thr Leu Leu Phe Ala Leu Met Met Ser Leu
1460 1465 1470

Pro Ser Leu Phe Asn Ile Gly Leu Leu Leu Phe Leu Val Met Phe
1475 1480 1485

Ile Tyr Ala Ile Phe Gly Met Ser Trp Phe Ser Lys Val Lys Lys
1490 1495 1500

Gly Ser Gly Ile Asp Asp Ile Phe Asn Phe Glu Thr Phe Thr Gly
1505 1510 1515

Ser Met Leu Cys Leu Phe Gln Ile Thr Thr Ser Ala Gly Trp Asp
1520 1525 1530

Thr Leu Leu Asn Pro Met Leu Glu Ala Lys Glu His Cys Asn Ser
1535 1540 1545

Ser Ser Gln Asp Ser Cys Gln Gln Pro Gln Ile Ala Val Val Tyr
1550 1555 1560

Phe Val Ser Tyr Ile Ile Ile Ser Phe Leu Ile Val Val Asn Met
1565 1570 1575

Tyr Ile Ala Val Ile Leu Glu Asn Phe Asn Thr Ala Thr Glu Glu
 1580 1585 1590

 Ser Glu Asp Pro Leu Gly Glu Asp Asp Phe Glu Ile Phe Tyr Glu
 1595 1600 1605

 Val Trp Glu Lys Phe Asp Pro Glu Ala Ser Gln Phe Ile Gln Tyr
 1610 1615 1620

 Ser Ala Leu Ser Asp Phe Ala Asp Ala Leu Pro Glu Pro Leu Arg
 1625 1630 1635

 Val Ala Lys Pro Asn Lys Phe Gln Phe Leu Val Met Asp Leu Pro
 1640 1645 1650

 Met Val Met Gly Asp Arg Leu His Cys Met Asp Val Leu Phe Ala
 1655 1660 1665

 Phe Thr Thr Arg Val Leu Gly Asp Ser Ser Gly Leu Asp Thr Met
 1670 1675 1680

 Lys Thr Met Met Glu Glu Lys Phe Met Glu Ala Asn Pro Phe Lys
 1685 1690 1695

 Lys Leu Tyr Glu Pro Ile Val Thr Thr Thr Lys Arg Lys Glu Glu
 1700 1705 1710

 Glu Gln Gly Ala Ala Val Ile Gln Arg Ala Tyr Arg Lys His Met
 1715 1720 1725

 Glu Lys Met Val Lys Leu Arg Leu Lys Asp Arg Ser Ser Ser Ser
 1730 1735 1740

 His Gln Val Phe Cys Asn Gly Asp Leu Ser Ser Leu Asp Val Ala
 1745 1750 1755

 Lys Val Lys Val His Asn Asp
 1760 1765

<210> 21

<211> 8

<212> PRT

<213> Rattus norvegicus

<400> 21

Ile Asp His His His His His
1 5 8

<210> 22
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Peptide for
raising antibodies

<400> 22
Cys Asn Gly Asp Leu Ser Ser Phe Gly Val Ala Lys Gly Lys Val His
1 5 10 15

<210> 23
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Peptide for
raising antibodies

<400> 23
Cys Asn Asp Gly Leu Ser Ser Leu Asp Val Ala Lys Val Lys Val His
1 5 10 15

Asn Asp

<210> 24
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 24
acgccttaag gtgaagatgg atgacagatg ct 32

<210> 25
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 25
ggttctagat cagtcacagt ggaccttgcc 30

<210> 26
<211> 23

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 26
gcctcggcga aagtagtggt agg 23

<210> 27
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 27
cctaccacta ctttcgccga gg 22

<210> 28
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 28
tacgaagtaa atgtaaccga gtga 24

<210> 29
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 29
ctcggttaca tttacttcgt agt 23

<210> 30
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 30
tatatatgcg gccgcaagat ggaggagagg tactatccag 40

<210> 31
<211> 24
<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 31

tattgtggtg ttccatggcc aaga

<210> 32

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 32

gccatggaac accacaatat g

21

<210> 33

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 33

cacgaagtaa aggtatgcgt atag

24

<210> 34

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 34

tatgaatgca gctgttgatt ccag

24

<210> 35

<211> 41

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 35

gatcgatcgg gccctcagtc acaatgaacc ttgatcttgg g

41

